

Attachments

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Attachment A

Site Visit Report



COMMONWEALTH of VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY
Blue Ridge Regional Office
www.deq.virginia.gov

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JUL - 7 2010

Mr. Steve Helms
General Manager
Primland Resort
4621 Busted Rock Road
Meadows of Dan, VA 24120

RE: Technical and Laboratory Inspection Reports
Primland Resort WWTP
VPDES Permit No. VA0092207

Dear Mr. Helms:

This is to acknowledge receipt of Mr. Daniel Early's letter, dated June 30, 2010, in response to the technical and laboratory inspections conducted at your facility on March 11, 2010. The response has been reviewed and it now appears that all deficiencies / recommendations noted within the reports have either been corrected or are in the process of being addressed. The staff appreciates your cooperation in addressing these items.

If you have additional questions, please contact me at the Blue Ridge Regional Office – Roanoke (540-562-6722) or via email at ryan.hendrix@deq.virginia.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Ryan L. Hendrix".

Ryan L. Hendrix
Compliance Inspector Senior

Problems identified at last inspection:

Corrected

Not Corrected

No recommendations for action were noted during the last inspection.**SUMMARY**

Recommendations for action:

1. Facility staff is operating to best of their knowledge, but appear to have a limited knowledge of the activated sludge process and how the new treatment system is designed to operate. Additional training concerning the activated sludge process and how it applies to the new facility would greatly improve the health and treatment efficiency of the activated sludge processes. Reportedly, the contractor has yet to provide five days of training required by the engineering specifications. Please investigate the status of this training and schedule to have it conducted as soon as possible.
2. No process control testing is being performed on the mixed liquor within the membrane filtration tanks. Because the membrane filtration process concentrates solids and operates as a completely separate activated sludge process from the Bio-Wheel, it is recommended that at least the same process control parameters (pH, D.O., 30-Minute Settleometer, MLSS) be analyzed on the membrane filtration mixed liquor.
3. The facility's return activated sludge (RAS) system appears to not be operating as designed. Per the proposed O&M manual, activated sludge from the Bio-Wheel tank is supposed to be pumped, via the recirculation pumps, to the membrane filtration tanks. Then as the level within the membrane filtration tank continues to rise the activated sludge will overflow into the RAS stand pipe and be returned to the Bio-Wheel tank via gravity. It is evident from the inspection findings that this process is not happening and it should be mentioned that at current flows it does not appear to be possible. The items were noted with reference to the RAS system:
 - During the inspection the recirculation pumps within Bio-Wheel A were noted as being off. Per the proposed O&M manual, the recirculation pumps are supposed to operate automatically via Bio-Wheel liquid level and is how activated sludge is supposed to be sent to the membrane filtration tanks. Without these pumps operating flow from Bio-Wheel A must be flowing via gravity back through the RAS gravity pipe. With the extremely low influent flows currently received by the facility it is not thought that operation of these pumps will completely alleviate the RAS system problems, but operation of the recirculation pumps should be initiated immediately to allow intended operation and see where improvements/modifications are necessary.
 - The mixed liquor within Bio-Wheel A is essentially non-existent and the unit is operating strictly as a fixed film treatment system because no RAS is being returned back to the Bio-Wheel. Process control parameters indicate a MLSS of 64 mg/L and 30-Min settleometer of 0 mL/L.
 - The mixed liquor within the membrane filtration tanks is exhibiting the characteristics of a very old sludge because no RAS is being removed and the facility has not wasted since startup in July 2009. The membrane filtration tanks are essentially operating as aeration basins, with the air scour being operated continuously. There is no process control data, but the MLSS concentration appeared to be fairly high and the mixed liquor exhibited greasy foam and a dark brown color.

In order to maintain a healthy solids inventory within the treatment train and ensure optimal treatment efficiency it is imperative that the problems with the facility's RAS system be identified and corrected. Please submit a plan of action detailing how the facility intends to address this item.

Comments:

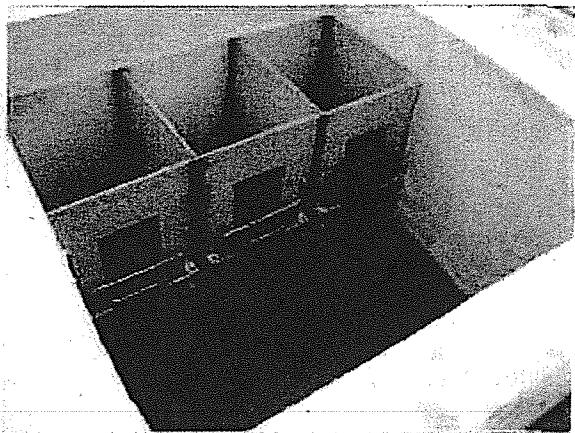
There are no additional comments at this point in time.

Figure 1



Mechanical Bar Screen

Figure 2



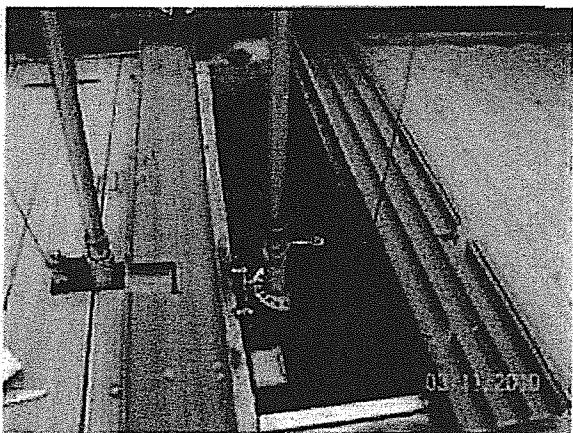
Influent Splitter Box

Figure 3



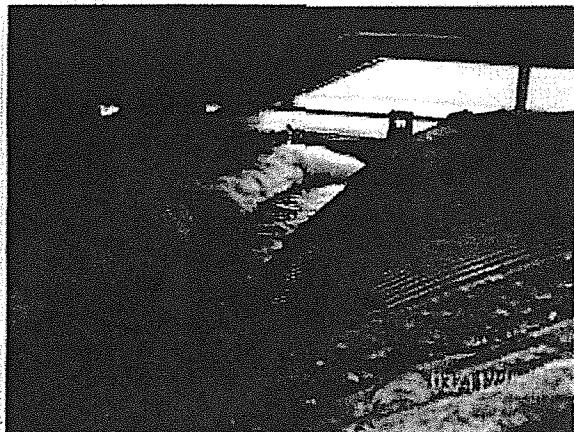
Train A EQ Basin

Figure 4



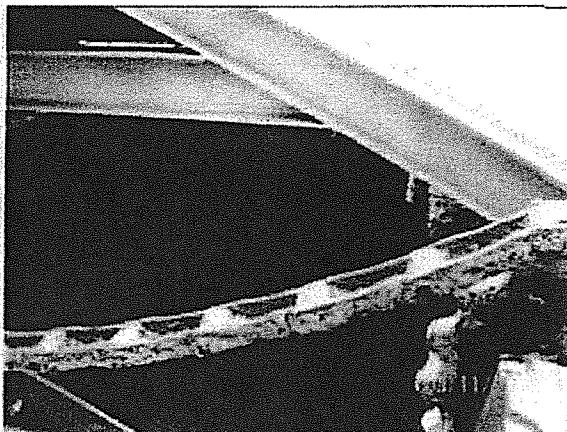
Train A Pre-Anoxic Basin

Figure 5.



Train A Bio-Wheel

Figure 6



Train A Bio-Wheel

Figure 7



Train A Membrane Filtration Tanks – Note the greasy foam

Figure 8



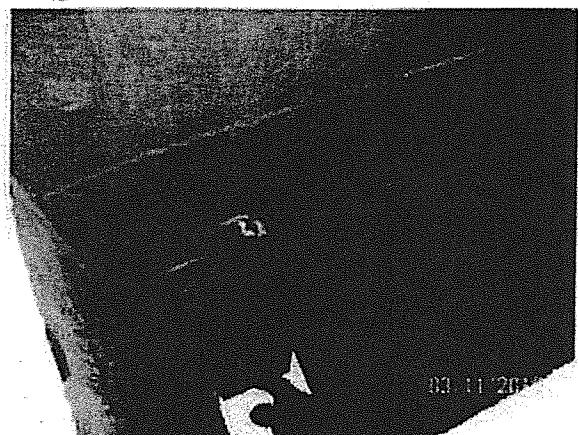
Train A Membrane Filtration Tanks – Note the greasy foam

Figure 9



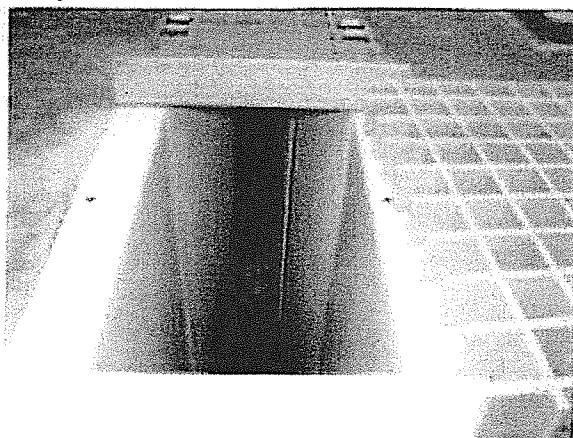
UV Disinfection

Figure 10



Final Effluent Storage

Figure 11



Final Effluent Parshall Flume

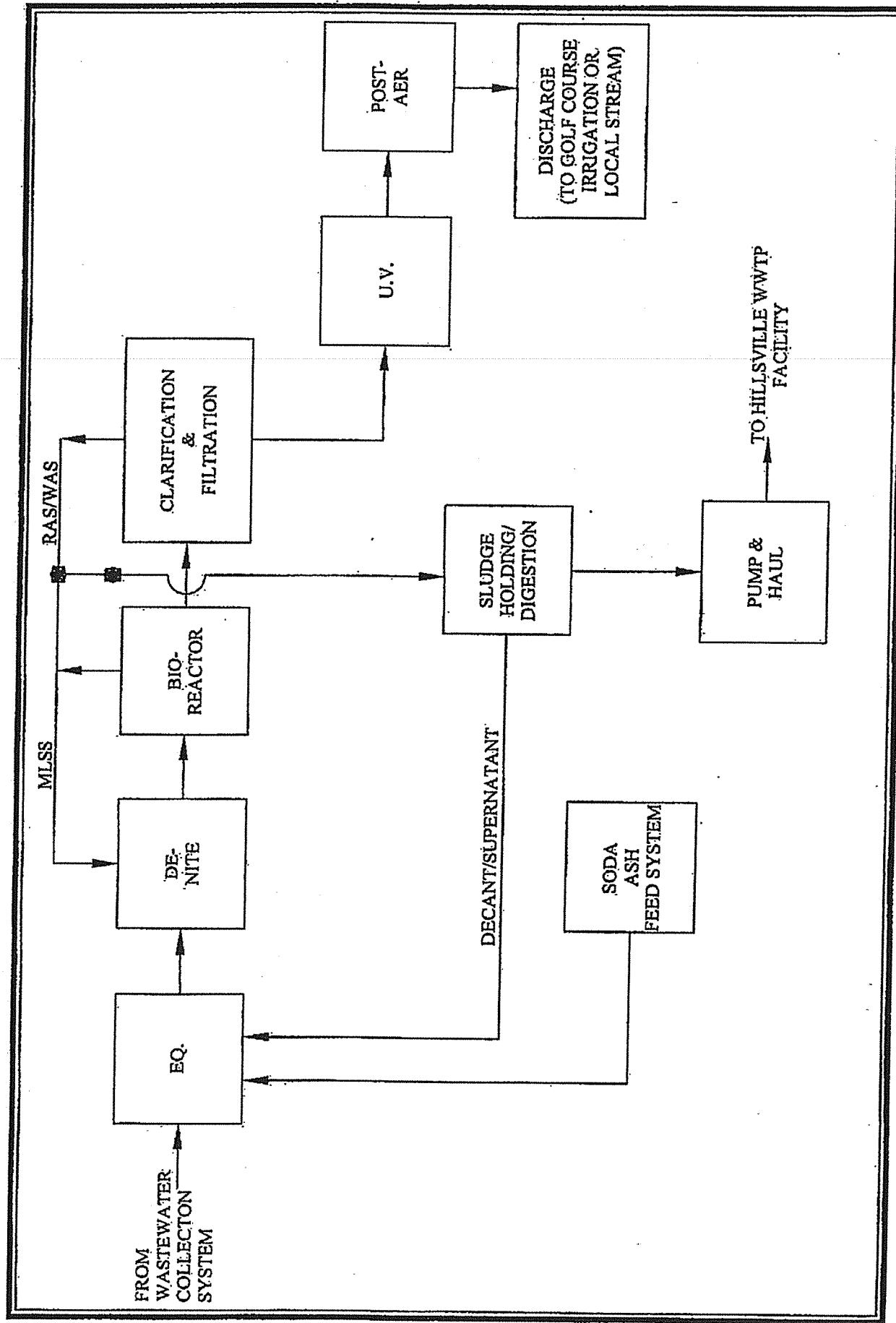
Figure 12



Outfall 001

Attachment B

Wastewater Treatment Diagrams



AGS PRIMLAND RESORT WASTEWATER TREATMENT PROCESS FLOW DIAGRAM
 2203 PETERS CREEK ROAD, NW - ROANOKE, VIRGINIA 24017 - Phone 540.562.2345 - Fax 540.562.2344
DESIGN ENGINEERING - SURVEYING - LANDSCAPE ARCHITECTURE - CONSTRUCTION MANAGEMENT

Attachment C

USGS Topographic Map

Attachment D

Flow Frequency Memorandum

MEMORANDUM
DEPARTMENT OF ENVIRONMENTAL QUALITY
Water Permitting, West Central Regional Office
3019 Peters Creek Road, Roanoke, VA 24019-2738

SUBJECT: Flow Frequency Determination
Primland Resort WWTP - VA#0092207

TO: Permit Issuance File

FROM: Kevin A. Harlow, WCRO

DATE: November 13, 2007

The Primland Resort WWTP discharges to an unnamed tributary of Bent Springs Branch southeast of Meadows of Dan in Patrick County, VA. Stream flow frequencies are required at this site for use in developing effluent limitations for the VPDES permit.

The receiving stream is a dry ditch, as verified during site visit, which drains to an intermittent stream and subsequently to Bent Springs Branch, a perennial tributary of Roaring Creek, as shown on the USGS Meadows of Dan Quadrangle topographical map. The flow frequencies for dry ditches are 0.0 cfs for the 1Q10, 7Q10, 30Q5, high flow 1Q10, high flow 7Q10, and harmonic mean. Flow frequencies have been determined for the first perennial reach downstream of the discharge point on Bent Springs Branch.

The USGS conducted several flow measurements at a continuous record gage on the South Mayo River near Nettleridge, VA #02069700 since 1963. The flow frequencies at the perennial point were determined by using proportional drainage areas. The data for the reference gage, the discharge point, and the perennial point are presented below:

South Mayo River near Nettleridge, VA (#02069700):

Drainage Area = 84.6 mi ²	
1Q30 = 15 cfs	30Q10 = 31 cfs
1Q10 = 22 cfs	High Flow 1Q10 = 35 cfs
7Q10 = 24 cfs (15.54 mgd)	High Flow 7Q10 = 39 cfs
30Q5 = 37 cfs	High Flow 30Q10 = 50 cfs
HM = 87.9 cfs	

UT to Bent Springs Branch, discharge point:

Drainage Area = <0.01 mi ²	
1Q30 = 0.0 cfs	30Q10 = 0.0 cfs
1Q10 = 0.0 cfs	High Flow 1Q10 = 0.0 cfs
7Q10 = 0.0 cfs	High Flow 7Q10 = 0.0 cfs
30Q5 = 0.0 cfs	High Flow 30Q10 = 0.0 cfs
HM = 0.0 cfs	

Bent Springs Branch:

Drainage Area = 0.33 mi ²	
1Q30 = 0.06 cfs	30Q10 = 0.12 cfs
1Q10 = 0.09 cfs	High Flow 1Q10 = 0.14 cfs
7Q10 = 0.09 cfs	High Flow 7Q10 = 0.15 cfs
30Q5 = 0.14 cfs	High Flow 30Q10 = 0.20 cfs
HM = 0.34 cfs	

The high flow months are January through June. This analysis does not address any withdrawals or discharges upstream of the discharge point.

Attachment E

Ambient Water Quality Information

- STORET Data (Station 4A-DAN169.57)
- 2006 305b Watershed Summary Report
(Excerpt)

Primland Resort WWTP - VA0092207

STORET Data

Station 4A-DAN169.57

Collection Date Time	Field Ph (s.u.)	Temp (C)	Wet Season
08/24/2005 11:30	7.6	21.6	No
10/25/2005 12:00	6.7	8.7	No
12/07/2005 10:45	7.4	4.2	No
08/30/2006 12:15	7.1	22.5	No
10/03/2006 11:45	6.9	15.0	No
12/05/2006 11:15	7.5	5.6	No
02/16/2006 11:15	7.4	5.3	Yes
04/19/2006 12:10	7.3	12.9	Yes
06/28/2006 11:15	7.3	18.4	Yes
Average		12.7	
90th %'ile	7.5	21.8	
10th %'ile	6.9		
90th %'ile Wet Seas		17.3	

Collection Date Time	HARDNESS, TOTAL (MG/L AS CACO3)
01/25/1993	16
04/14/1993	12
07/15/1993	14
10/27/1993	18
01/24/1994	12
07/13/1994	15
10/18/1994	15
01/24/1995	4
04/10/1995	15
07/17/1995	12
10/05/1995	42
01/17/1996	14
04/03/1996	16
07/15/1996	42
11/26/1996	16
01/08/1997	12
04/02/1997	9.4
07/08/1997	12.8
10/20/1997	16
01/12/1998	15.3
04/14/1998	18.4
07/20/1998	25.5
10/27/1998	15
01/12/1999	20
07/14/1999	9.7
11/18/1999	12.5
01/13/2000	15.1
03/08/2000	10
05/04/2000	9
Average	16



2010 Impaired Waters

Categories 4 and 5 by DCR Watershed*

Roanoke and Yadkin River Basins

Fact Sheet prepared for DCR Watershed: L42*

Cause Group Code: L42R-01-BAC Little Dan River

Location: Little Dan River mainstem from the VA/NC State Line upstream to just above the mouth of Pigg Creek.

City / County: Patrick Co.

Use(s): Recreation

Cause(s) /

VA Category: Escherichia coli/ 4A

Escherichia coli (E.coli) bacteria results render the Recreational Use impaired for 6.77 miles in 2008. The Dan River Bacteria Total Maximum Daily Load (TMDL) is U.S. EPA approved on 12/08/2008 [Fed ID 35748] and SWCB approved 4/28/2009. The Dan River Bacteria TMDL did not specifically address the Little Dan River but is encompassed by the TMDL Watershed. These waters are nested within the Dan River Bacteria TMDL Watershed and allocations via the Study. These waters are Category 4A.

4ALDR004.50- (Rt. 645 Bridge) There are no additional data beyond the 2008 IR where two of nine E.coli samples exceed the 235 cfu/100 ml instantaneous criterion. Exceeding values are 250 and 500 cfu/100 ml.

4ALDR002.61- (Rt. 649 Bridge (Gammons Rd.)) There are no additional data beyond the 2008 IR where E.coli observations find three of nine are in excess of the instantaneous criterion. Values exceeding the criterion range from 400 to 700 cfu/100 ml.

Assessment Unit / Water Name / Description	Cause Category / Name	Nested	Cycle First	TMDL Schedule or EPA Approval	Size
VAW-L42R_LDR01A02 / Little Dan River / Little Dan River mainstem from the VA/NC State Line upstream to just above the mouth of Pigg Creek Class V.	4A Escherichia coli	Y	2008	12/8/2008	6.77

Little Dan River DCR Watershed: L42*	Estuary (Sq. Miles)	Reservoir (Acres)	River (Miles)
Escherichia coli - Total Impaired Size by Water Type:			6.77

Sources:

Livestock (Grazing or Feeding Operations)	On-site Treatment Systems (Septic Systems and Similar Decentralized Systems)	Unspecified Domestic Waste	Wet Weather Discharges (Non-Point Source)
Wildlife Other than Waterfowl			

*Header Information: Location, City/County, Cause/VA Category and Narratives; describe the entire extent of the Impairment. Sizes presented are for Assessment Units (AUs) lying within the DCR Watershed boundary noted above.

Bacteria TMDL Development for the Dan River, Blackberry Creek, Byrds Branch, Double Creek, Fall Creek, Leatherwood Creek, Marrowbone Creek, North Fork Mayo River, South Fork Mayo River, Smith River, Sandy Creek, and Sandy River Watersheds

Submitted by

Virginia Department of Environmental Quality

Prepared by



and



THE Louis Berger Group, INC.

2445 M Street, NW
Washington, DC 20037

September 2008

Attachment F

Wasteload and Limit Calculations

- **Mixing Zone Analysis**
- **Wasteload Allocation Spreadsheet**
- **STATS Program Results**
- **Regional Model v4.11 Output**

Mixing Zone Predictions for

Primland Resort WWTP

Effluent Flow = 0.087 MGD

Stream 7Q10 = 0.09 MGD

Stream 30Q10 = 0.12 MGD

Stream 1Q10 = 0.09 MGD

Stream slope = 0.189 ft/ft

Stream width = 4 ft

Bottom scale = 3

Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = .07 ft

Length = 136.86 ft

Velocity = .9779 ft/sec

Residence Time = .0016 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = .077 ft

Length = 126.21 ft

Velocity = 1.0398 ft/sec

Residence Time = .0014 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = .07 ft

Length = 136.86 ft

Velocity = .9779 ft/sec

Residence Time = .0389 hours

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.

Mixing Zone Predictions for Primland Resort WWTP

Effluent Flow = 0.13 MGD
Stream 7Q10 = 0.09 MGD
Stream 30Q10 = 0.12 MGD
Stream 1Q10 = 0.09 MGD
Stream slope = 0.189 ft/ft
Stream width = 4 ft
Bottom scale = 3
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = .0799 ft
Length = 122.21 ft
Velocity = 1.0648 ft/sec
Residence Time = .0013 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = .0864 ft
Length = 114.26 ft
Velocity = 1.1191 ft/sec
Residence Time = .0012 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = .0799 ft
Length = 122.21 ft
Velocity = 1.0648 ft/sec
Residence Time = .0319 hours

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.

Primland Resort WWTP - VA0092207
Discharge Monitoring Report Data

Due Date	Flow Avg	Flow Max	Inflow Avg	Inflow Max	DO (mg/L)	E. coli	BOD6	TSS avg	TSS max	Amm Avg	Amm Max	pH Min	pH Max	pH 90%	pH 10%	
10-Aug-2009	0.0053	0.012			7.4	0	0	0	0	0	0	8.3	9.1	9.0	8.4	
10-Sep-2009	0.004	0.011			7.3	1.6	0	0	0	0	0	8	8.9	8.8	8.1	
10-Oct-2009	0.005	0.012			7.5	0	0	0	0	0	0	8	8.8	8.7	8.1	
10-Nov-2009	0.0048	0.0098			7.8	0	0	0	0	0	0	7.8	9	8.8	8.0	
10-Dec-2009	0.0029	0.0065			7.9	0	0	0	0	0	0	0	7.5	8.9	8.7	
10-Jan-2010	0.0029	0.0063			8.4	0	0	0	0	0	0	0	7.7	9.1	8.9	
10-Feb-2010	0.0015	0.008			6.5	0	0	3.2	10.8	0.35	0.9	7.6	8.5	8.4	7.7	
10-Mar-2010	0.0024	0.0062			8.6	1	0	1.8	1.9	0.05	0.2	7.4	8.6	8.4	7.6	
10-Apr-2010	0.0018	0.004			9.2	1	0	0	0	0	0	0	0	7	8.5	8.3
10-May-2010	0.0015	0.0032			8.78	0	0	1.8	3.2	0	0	0	7.1	7.9	7.2	
10-Jun-2010	0.0021	0.0058			8.6	0	0	1.6	3.8	0	0	0	7.6	8.9	8.7	
10-Jul-2010	0.003	0.0079			0.0088	7.7	0	0	0.5	1.2	0	0	7.3	8.9	8.6	
10-Aug-2010	0.0048	0.0097			0.0056	0.01	7.44	0	0	0	0	0	8.3	8.7	8.4	
10-Sep-2010	0.0055	0.0106			0.0059	0.0103	7.08	0	0	0	0	0	7.6	8.7	7.8	
10-Oct-2010	0.0054	0.0101			0.0073	0.0141	7.41	0	0	0.4	0.4	0	0	7.8	8.7	
10-Nov-2010	0.0058	0.0112			0.0073	0.0144	8.1	0	0	0	0	0	7.8	8.3	8.2	
10-Dec-2010	0.0036	0.0078			0.0045	0.0087	8.9	0	0	0	0	0	7.8	8.3	8.2	
10-Jan-2011	0.0043	0.0076			0.0058	0.0109	9.4	0	0	0	0	0	7.9	8.3	8.2	
10-Feb-2011	0.0028	0.0087			0.0055	0.0372	10.5	0	0	0	0	0	7.8	8.8	8.0	
10-Mar-2011	0.0024	0.0058			0.0045	0.0129	10.1	0	0	0	0	0	7.9	8.7	8.6	
10-Apr-2011	0.003	0.0075			0.0039	0.0098	9.3	0	0	0	0	0	7.8	8.4	8.3	
10-May-2011	0.0044	0.0079			0.0077	0.0118	8.38	0	0	0	0	0	8	8.8	8.7	
10-Jun-2011	0.0039	0.0063			0.0075	0.0248	8.08	0	0	0	0	0	8.3	8.7	8.4	
10-Jul-2011	0.0048	0.0087			0.0156	0.141	7.55	0	0	0	0	0	8.3	9	8.4	
10-Aug-2011	0.0075	0.0111			0.0098	0.0163	7.1	0	0	0	0	0	8.3	8.6	8.3	
10-Sep-2011	0.0089	0.0153			0.0081	0.0139	6.53	0	0	0	0	0	7.9	8.5	8.4	
10-Oct-2011	0.0072	0.0131			0.0053	0.0088	7	0	0	0	0	0	7.8	9	8.0	
10-Nov-2011	0.0108	0.0165			0.0082	0.0148	7.22	0	0	0	0	0	7.8	10.1	9.7	
10-Dec-2011	0.0106	0.0204			0.008	0.0389	7.79	0	0	0	0	0	7.8	8.8	8.6	
10-Jan-2012	0.0128	0.0176			0.0124	0.0248	7.93	0	0	0	0	0	6.2	8.3	8.0	
10-Feb-2012	0.0075	0.0145			0.0075	0.0202	8.01	0	0	0	0	0	7.8	8.2	8.1	
10-Mar-2012	0.0084	0.0155			0.0136	0.0329	9.57	0	0	0	0	0	7.6	8.1	8.0	
10-Apr-2012	0.094	0.017			0.0237	0.0508	8.2	0	0	0	0	0	7.3	8	7.9	
10-May-2012	0.012	0.0174			0.0185	0.0874	7.87	0	0	0.3	1.3	0	0	7	8	
10-Jun-2012	0.0123	0.0206			0.0091	0.0134	7.2	0	0	0	0	0	7.7	8	7.7	
10-Jul-2012	0.0127	0.023			0.0086	0.0128	7.01	0	0	1	2.7	0	7.7	7.9	7.7	
10-Aug-2012	0.0109	0.0202			0.008	0.0204	7.04	0	0	0.3	1.7	0	0.32	7	7.8	
10-Sep-2012	0.0111	0.0169			0.01	0.0219	7.32	0	0	0	0	0	7.7	8.2	8.1	
10-Oct-2012	0.015	0.026			0.011	0.028	7.19	0	0	2.1	5.4	0	0	7.7	8.5	
10-Nov-2012	0.012	0.018			0.013	0.021	7.49	0	0	0	0	0	7.7	8.3	8.2	
Average	0.0085	0.0119			0.0090	0.0258	8.0	0.09	0	0.35	0.84	0.01	0.04	7.7	8.6	8.4

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name:

Primland Resort WWTP

Permit No.: VA0092207

Receiving Stream:

UT to Bent Springs Branch

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information	
Mean Hardness (as CaCO ₃) =	16 mg/L
90% Temperature (Annual) =	21.8 deg C
90% Temperature (Wet season) =	17.3 deg C
90% Maximum pH =	7.5 SU
10% Maximum pH =	6.9 SU
Tier Designation (1 or 2) =	2
Public Water Supply (PWS) Y/N? =	n
Trout Present Y/N? =	y
Early Life Stages Present Y/N? =	y

Stream Flows	
1Q10 (Annual) =	0.09 MGD
7Q10 (Annual) =	0.09 MGD
30Q10 (Annual) =	0.12 MGD
1Q10 (Wet season) =	0.14 MGD
30Q10 (Wet season) =	0.2 MGD
30Q5 =	0.14 MGD
Harmonic Mean =	0.34 MGD

Mixing Information	
Annual - 1Q10 Mix =	100 %
- 7Q10 Mix =	100 %
- 30Q10 Mix =	100 %
Wet Season - 1Q10 Mix =	100 %
- 30Q10 Mix =	100 %

Effluent Information	
Mean Hardness (as CaCO ₃) =	100 mg/L
90% Temp (Annual) =	18.8 deg C
90% Temp (Wet season) =	17.2 deg C
90% Maximum pH =	8.4 SU
10% Maximum pH =	7.8 SU
Discharge Flow =	0.0666 MGD

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria	Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations				
			Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	HH	
Aceanaphthene	5	-	na	9.9E+02	-	na	2.6E+03	-	na	1.0E+02	-	-	na	2.6E+02	--	
Acrolein	0	-	na	9.3E+00	-	na	2.4E+01	-	na	9.3E+01	-	-	na	2.4E+00	--	
Acrylonitrile ^c	0	-	na	2.5E+00	-	na	1.2E+01	-	na	2.5E+01	-	-	na	1.2E+00	--	
Aldrin ^c	0	3.0E+00	-	na	5.0E-04	6.1E+00	-	na	2.5E-03	7.5E-01	-	na	5.0E-05	1.5E+00	--	
Ammonia-N (mg/l) (Yearly)	0	8.96E+00	2.43E+00	na	-	1.83E+01	5.80E+00	na	-	2.24E+00	6.08E-01	na	-	4.57E+00	1.45E+00	--
Ammonia-N (mg/l) (High Flow)	0	1.00E+01	3.22E+00	na	-	2.63E+01	1.07E+01	na	-	2.51E+00	8.05E-01	na	-	6.56E+00	2.66E+00	--
Anthracene	0	-	na	4.0E+04	-	na	1.0E+05	-	na	4.0E+03	-	-	na	1.0E+04	--	--
Antimony	0.12	-	na	6.4E+02	-	na	1.7E+03	-	na	6.4E+01	-	-	na	1.7E+02	--	--
Arsenic	0.45	3.4E+02	1.5E+02	na	-	6.9E+02	3.1E+02	na	-	8.5E+01	3.8E+01	na	-	1.7E+02	7.7E+01	--
Barium	92	-	na	-	-	na	-	-	na	-	-	-	-	-	--	--
Benzene ^c	0	-	na	5.1E+02	-	na	2.5E+03	-	na	5.1E+01	-	-	na	2.5E+02	--	--
Benzidine ^c	0	-	na	2.0E-03	-	na	9.9E-03	-	na	2.0E-04	-	-	na	9.9E-04	--	--
Benzo (a) anthracene ^c	0	-	na	1.9E-01	-	na	8.9E-01	-	na	1.8E-02	-	-	na	8.9E-02	--	--
Benzo (b) fluoranthene ^c	0	-	na	1.8E-01	-	na	8.9E-01	-	na	1.8E-02	-	-	na	8.9E-02	--	--
Benzo (K) fluoranthene ^c	0	-	na	1.9E-01	-	na	8.9E-01	-	na	1.8E-02	-	-	na	8.9E-02	--	--
Benzo (a) pyrene ^c	0	-	na	1.4E+03	-	na	6.9E+03	-	na	1.8E-02	-	-	na	8.9E-02	--	--
Bis2-Chloroethyl Ether ^c	0	-	na	1.9E+03	-	na	5.0E+03	-	na	5.3E-01	-	-	na	2.6E+00	--	--
Bis2-Ethylhexyl Phthalate ^c	0	-	na	6.5E+04	-	na	1.7E+05	-	na	6.5E+03	-	-	na	1.7E+04	--	--
Bromoform ^c	0	-	na	2.2E+01	-	na	1.1E+02	-	na	2.2E+00	-	-	na	1.1E+01	--	--
Bulylbenzylphthalate	0	-	na	4.2E+01	2.2E+01	na	-	-	na	1.4E+02	-	-	na	6.9E+02	--	--
Cadmium	0	2.1E+00	7.3E-01	na	-	4.3E+00	1.5E+00	na	-	5.2E-01	1.8E-01	na	-	1.1E+00	3.7E-01	--
Carbon Tetrachloride ^c	0	-	na	1.6E+01	-	na	7.9E+01	-	na	1.6E+00	-	-	na	7.9E+00	--	--
Chlordane ^c	0	2.4E+00	4.3E-03	na	8.1E-03	4.9E+00	8.8E-03	na	4.0E-02	6.0E-01	1.1E-03	na	4.0E-03	1.2E+00	--	7.9E+00
Chloride	0	8.6E+05	2.3E+05	na	-	1.8E+06	4.7E+05	na	-	2.2E+05	5.8E+04	na	-	4.4E+05	1.2E+05	4.0E+03
TRC	0	1.9E+01	1.1E+01	na	-	3.9E+01	2.2E+01	na	-	4.8E+00	2.8E+00	na	-	9.7E+00	5.6E+00	--
Chlorobenzene	0	-	na	1.6E+03	-	na	4.2E+03	-	na	1.6E+02	-	-	na	4.2E+02	--	4.2E+02

Parameter (ug/L unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations	
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic
Chlordibromomethane ^c	0	-	-	na	1.3E+02	-	-	na	6.4E+02	-	-	na	1.3E+01	-	-	na	6.4E+01	-	-
Chloroform	0	-	-	na	1.1E+04	-	-	na	2.9E+04	-	-	na	1.1E+03	-	-	na	2.9E+03	-	-
2-Chloronaphthalene	0	-	-	na	1.6E+03	-	-	na	4.2E+03	-	-	na	1.6E+02	-	-	na	4.2E+02	-	-
2-Chlorophenol	0	-	-	na	1.3E+02	-	-	na	3.9E+02	-	-	na	1.5E+01	-	-	na	3.9E+01	-	-
Chlorpyrifos	0	8.3E-02	4.1E-02	na	-	1.7E-01	8.4E-02	na	-	2.1E-02	1.0E-02	na	-	4.2E-02	2.1E-02	na	-	4.2E-02	2.1E-02
Chromium III	0	3.6E+02	4.7E+01	na	-	7.4E+02	9.6E+01	na	-	9.0E+01	1.2E+01	na	-	1.8E+02	2.4E+01	na	-	1.8E+02	2.4E+01
Chromium VI	0	1.6E+01	1.1E+01	na	-	3.3E+01	2.2E+01	na	-	4.0E+00	2.8E+00	na	-	8.2E+00	5.6E+00	na	-	8.2E+00	5.6E+00
Chromium, Total	0.13	-	-	1.0E+02	-	-	-	na	-	-	1.0E+01	-	-	-	2.6E+01	-	-	-	-
Chrysene ^c	0	-	-	na	1.8E-02	-	-	na	8.9E-02	-	-	na	1.8E-03	-	-	na	8.9E-03	-	-
Copper	0.22	7.9E+00	5.6E+00	na	-	1.6E+01	1.1E+01	na	4.2E+04	5.5E+00	1.3E+00	na	4.2E+00	2.9E+00	-	4.2E+00	2.9E+00	-	-
Cyanide, Free	0	2.2E+01	5.2E+00	na	-	3.1E-03	-	na	1.5E-02	-	-	na	3.1E-04	-	-	na	1.5E-03	-	-
DDD ^c	0	-	-	na	2.2E+03	-	-	na	1.1E-02	-	-	na	2.2E-04	-	-	na	1.1E-03	-	-
DDE ^c	0	-	-	na	1.1E+00	1.0E-03	-	na	2.2E+00	2.0E-03	na	2.8E-01	-	-	na	5.6E-01	5.1E-04	na	1.1E-03
DDT ^c	0	-	-	na	1.0E-01	-	-	na	-	-	2.0E-01	-	-	na	2.2E-04	-	-	-	-
Demeton	0	-	-	na	-	-	-	na	-	-	2.0E-01	-	-	-	2.5E-02	-	-	5.1E-02	-
Diazinon	0	1.7E-01	1.7E-01	na	-	3.5E-01	3.5E-01	na	-	4.3E-02	4.3E-02	na	-	8.7E-02	8.7E-02	na	-	8.7E-02	8.7E-02
Dibenzo(a,h)anthracene ^c	0	-	-	na	1.8E-01	-	-	na	8.9E-01	-	-	na	1.8E-02	-	-	na	8.9E-02	-	-
1,2-Dichlorobenzene	0	-	-	na	1.3E+03	-	-	na	3.4E+03	-	-	na	1.3E+02	-	-	na	3.4E+02	-	-
1,3-Dichlorobenzene	0	-	-	na	9.6E+02	-	-	na	2.5E+03	-	-	na	9.6E+01	-	-	na	2.5E+02	-	-
1,4-Dichlorobenzene	0	-	-	na	1.9E+02	-	-	na	5.0E+02	-	-	na	1.9E+01	-	-	na	5.0E+01	-	-
3,3-Dichlorobenzidine ^c	0	-	-	na	2.8E-01	-	-	na	1.4E+00	-	-	na	2.8E-02	-	-	na	1.4E-01	-	-
Dichlorobromomethane ^c	0	-	-	na	1.7E+02	-	-	na	8.4E+02	-	-	na	1.7E+01	-	-	na	8.4E+01	-	-
1,2-Dichloroethane ^c	0	-	-	na	3.7E+02	-	-	na	1.8E+03	-	-	na	3.7E+01	-	-	na	1.8E+02	-	-
1,1-Dichloroethylene	0	-	-	na	7.1E+03	-	-	na	1.9E+04	-	-	na	7.1E+02	-	-	na	1.9E+03	-	-
1,2-trans-dichloroethylene	0	-	-	na	1.0E+04	-	-	na	2.6E+04	-	-	na	1.0E+03	-	-	na	2.6E+03	-	-
2,4-Dichlorophenol	0	-	-	na	2.9E+02	-	-	na	7.6E+02	-	-	na	2.9E+01	-	-	na	7.6E+01	-	-
2,4-Dichlorophenoxyacetic acid (2,4-D)	0	-	-	na	-	-	-	na	-	-	na	-	-	-	na	-	-	-	-
1,2-Dichloropropane ^c	0	-	-	na	1.5E+02	-	-	na	7.4E+02	-	-	na	1.5E+01	-	-	na	7.4E+01	-	-
1,3-Dichloropropane ^c	0	-	-	na	2.1E+02	-	-	na	1.0E+03	-	-	na	2.1E+01	-	-	na	1.0E+02	-	-
Dieldrin ^c	0	2.4E-01	5.6E-02	na	5.0E-04	4.9E-01	1.1E-01	na	2.7E-03	6.0E-02	1.4E-02	na	5.0E-05	1.2E-01	2.9E-02	na	2.7E-04	1.2E-01	2.9E-02
Diatyl Phthalate	0	-	-	na	4.4E+04	-	-	na	1.2E+05	-	-	na	4.4E+03	-	-	na	1.2E+04	-	-
2,4-Dimethylphenol	0	-	-	na	8.5E+02	-	-	na	2.2E+03	-	-	na	8.5E+01	-	-	na	2.2E+02	-	-
Dimethyl Phthalate	0	-	-	na	1.1E+06	-	-	na	2.9E+06	-	-	na	1.1E+05	-	-	na	2.9E+05	-	-
Di-n-Butyl Phthalate	0	-	-	na	4.5E+03	-	-	na	1.2E+04	-	-	na	4.5E+02	-	-	na	1.2E+03	-	-
2,4-Dinitrophenol	0	-	-	na	5.3E+03	-	-	na	1.4E+04	-	-	na	5.3E+02	-	-	na	1.4E+03	-	-
2-Methyl-4,6-Dinitrophenol	0	-	-	na	2.8E+02	-	-	na	7.3E+02	-	-	na	2.8E+01	-	-	na	7.3E+01	-	-
2,4-Dinitrotoluene ^c	0	-	-	na	3.4E+01	-	-	na	1.7E+02	-	-	na	3.4E+00	-	-	na	1.7E+01	-	-
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	-	-	na	5.1E-08	-	-	na	1.3E-07	-	-	na	5.1E-09	-	-	na	1.3E-08	-	-
1,2-Diphenylhydrazine ^c	0	-	-	na	2.0E+00	-	-	na	9.9E+00	-	-	na	2.0E-01	-	-	na	9.9E-01	-	-
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	4.5E-01	1.1E-01	na	2.3E+02	5.5E-02	1.4E-02	na	8.9E+00	1.1E-01	2.9E-02	na	2.3E+01	1.1E-01	2.9E-02
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	4.5E-01	1.1E-01	na	2.3E+02	5.5E-02	1.4E-02	na	8.9E+00	1.1E-01	2.9E-02	na	2.3E+01	1.1E-01	2.9E-02
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	4.5E-01	1.1E-01	na	2.3E+02	5.5E-02	1.4E-02	na	8.9E+00	1.1E-01	2.9E-02	na	2.3E+01	1.1E-01	2.9E-02
Endosulfan Sulfate	0	-	-	na	6.0E-02	1.8E-01	7.3E-02	na	1.6E-01	2.2E-02	9.0E-03	na	6.0E-03	4.4E-02	1.8E-02	na	1.6E-02	4.4E-02	1.8E-02
Endrin	0	-	-	na	3.0E-01	-	-	na	7.8E-01	-	-	na	3.0E-02	-	-	na	7.8E-02	-	-

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations					
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH		
Ethylbenzene	0	-	-	na	2.1E+03	-	-	na	5.5E+03	-	-	2.1E+02	-	-	na	5.5E+02	-	-	na	5.5E+02	-		
Fluoranthene	0	-	-	na	1.4E+02	-	-	na	3.7E+02	-	-	1.4E+01	-	-	na	3.7E+01	-	-	na	3.7E+01	-		
Fluorene	0	-	-	na	5.3E+03	-	-	na	1.4E+04	-	-	5.3E+02	-	-	na	1.4E+03	-	-	na	1.4E+03	-		
Foaming Agents	0	-	-	na	-	-	-	na	-	-	-	na	-	-	na	-	-	-	na	-	-		
Guthien	0	-	1.0E-02	na	-	2.0E-02	na	-	2.5E-03	na	-	5.1E-03	na	-	5.1E-03	na	-	-	na	-	-		
Heptachlor	c	0	5.2E-01	3.8E-03	na	7.9E-04	1.1E+00	7.7E-03	na	3.9E-03	1.3E-01	9.5E-04	na	7.9E-05	2.7E-01	1.9E-03	na	3.9E-04	2.7E-01	1.9E-03	na	3.9E-04	
Heptachlor Epoxide	c	0	5.2E-01	3.8E-03	na	3.9E-04	1.1E+00	7.7E-03	na	1.9E-03	1.3E-01	9.5E-04	na	3.9E-05	2.7E-01	1.9E-03	na	1.9E-04	2.7E-01	1.9E-03	na	1.9E-04	
Hexachlorobenzene	c	0	-	na	2.9E-03	-	-	na	1.4E-02	-	-	na	2.9E-04	-	-	na	1.4E-03	-	-	na	1.4E-03	-	
Hexachlorobutadiene	c	0	-	na	1.8E+02	-	-	na	8.9E+02	-	-	na	1.8E+01	-	-	na	8.9E+01	-	-	na	8.9E+01	-	
Hexachlorocyclohexane		0	-	na	4.9E-02	-	-	na	2.4E-01	-	-	na	4.9E-03	-	-	na	2.4E-02	-	-	na	2.4E-02	-	
Alpha-BHC ^c	0	-	-	na	1.7E-01	-	-	na	8.4E-01	-	-	na	1.7E-02	-	-	na	8.4E-02	-	-	na	8.4E-02	-	
Beta-BHC ^c	0	-	-	na	9.5E-01	na	1.8E+00	1.9E+00	-	na	8.9E+00	2.4E-01	na	1.8E-01	4.8E-01	-	na	8.9E-01	4.8E-01	-	na	8.9E-01	
Hexachlorocyclohexane		0	-	na	1.8E+00	na	1.1E+03	-	na	2.9E+03	-	na	1.1E+02	-	-	na	2.9E+02	-	-	na	2.9E+02	-	
Gamma-BHC ^c (Lindane)	0	-	-	na	3.8E+01	-	-	na	1.6E+02	-	-	na	3.8E+00	-	-	na	1.6E+01	-	-	na	1.6E+01	-	
Hexahydrocyclopentadiene		0	-	na	2.0E+00	na	-	na	4.1E+00	na	-	na	5.0E-01	na	-	na	1.0E+00	na	-	na	1.0E+00	na	
Hexachloroethane	c	0	-	na	1.8E-01	-	-	na	8.9E-01	-	-	na	1.8E-02	-	-	na	8.9E-02	-	-	na	8.9E-02	-	
Hydrogen Sulfide		0	-	na	-	-	-	na	-	-	na	-	-	-	na	-	-	-	na	-	-		
Indeno (1,2,3-cd) Pyrene ^c	0	-	-	na	-	-	-	na	-	-	na	-	-	-	na	-	-	-	na	-	-		
Iron		0	-	na	-	-	-	na	-	-	na	-	-	-	na	-	-	-	na	-	-		
Isophorone ^c	0	-	0.0E+00	na	-	9.6E+03	-	na	4.7E+04	-	-	na	9.6E+02	-	-	na	4.7E+03	-	-	na	4.7E+03	-	
Kepone		0	-	0.0E+00	na	-	-	na	0.0E+00	na	-	na	0.0E+00	na	-	na	0.0E+00	na	-	na	0.0E+00	-	
Lead		0	5.8E+01	6.8E+00	na	-	1.2E+02	1.4E+01	na	-	1.5E+01	1.7E+00	na	-	3.0E+01	3.4E+00	na	-	5.1E-02	3.4E+00	na	-	
Malathion		0	-	1.0E-01	na	-	-	na	-	-	na	-	-	-	na	-	-	-	na	-	-		
Manganese	20	-	-	na	-	-	-	na	-	-	na	-	-	-	na	-	-	-	na	-	-		
Mercury		0	1.4E+00	7.7E-01	-	-	2.9E+00	1.6E+00	-	-	3.5E-01	1.9E-01	-	-	7.1E-01	3.9E-01	-	-	7.1E-01	3.9E-01	-	-	
Methylene Bromide		0	-	na	1.5E+03	-	-	na	3.9E+03	-	-	na	1.5E+02	-	-	na	3.9E+02	-	-	na	3.9E+02	-	
Methylene Chloride ^c	0	-	-	na	5.9E+03	-	-	na	2.9E+04	-	-	na	5.9E+02	-	-	na	2.9E+03	-	-	na	2.9E+03	-	
Methoxychlor		0	-	3.0E-02	na	-	-	na	6.1E-02	na	-	7.5E-03	na	-	-	1.5E-02	na	-	-	1.5E-02	na	-	
Mirex		0	-	0.0E+00	na	-	-	na	0.0E+00	na	-	0.0E+00	na	-	-	0.0E+00	na	-	-	0.0E+00	na	-	
Nickel	0.38	1.1E+02	1.3E+01	na	4.6E+03	2.3E+02	2.5E+01	na	1.2E+04	2.9E+01	na	4.6E+00	5.8E+01	6.6E+00	na	1.2E+03	5.8E+01	6.6E+00	na	1.2E+03	5.8E+01	6.6E+00	
Nitrate (as N)	0	-	-	na	5.1E+00	-	-	na	2.5E+01	-	-	na	5.1E-01	-	-	na	3.0E+01	-	-	na	3.0E+01	-	
Nitrobenzene		0	-	na	6.9E+02	-	-	na	1.8E+03	-	-	na	6.9E+01	-	-	na	1.8E+02	-	-	na	1.8E+02	-	
N-Nitrosodimethylamine ^c	0	-	-	na	3.0E+01	-	-	na	1.5E+02	-	-	na	3.0E+00	-	-	na	1.5E+01	-	-	na	1.5E+01	-	
N-Nitrosodiphenylamine ^c	0	-	-	na	6.0E+01	-	-	na	3.0E+02	-	-	na	6.0E+00	-	-	na	3.0E+01	-	-	na	3.0E+01	-	
N-Nitrosod-n-propylamine ^c	0	-	-	na	2.8E+01	6.6E+00	-	na	5.7E+01	1.3E+01	na	7.0E+00	1.7E+00	-	na	1.4E+01	3.4E+00	-	na	1.4E+01	3.4E+00		
Parathion		0	6.5E-02	1.3E-02	na	-	-	na	1.3E-01	2.7E-02	na	-	1.6E-02	3.3E-03	na	-	3.3E-02	6.6E-03	na	-	3.3E-02	6.6E-03	na
PCB Total ^c	0	-	-	na	1.4E-02	na	6.4E-04	-	2.9E-02	na	3.2E-03	-	3.5E-03	na	6.4E-05	-	7.1E-03	na	3.2E-04	7.1E-03	na	-	
Permethrinophenol ^c	0	1.0E-01	7.7E+00	na	3.0E+01	2.1E+01	1.6E+01	na	1.5E+02	2.5E+00	1.9E+00	na	3.0E+00	5.1E+00	3.9E+00	na	1.5E+01	5.1E+01	3.9E+00	na	1.5E+01	5.1E+01	3.9E+00
Phenol		0	-	na	8.6E+05	-	-	na	2.3E+06	-	-	na	1.0E+04	-	-	na	4.0E+02	-	-	na	2.3E+05	-	
Pyrene		0	-	na	4.0E+03	-	-	na	-	-	na	-	-	-	na	-	-	-	na	-	-		
Radionuclides		0	-	na	-	-	-	na	-	-	na	-	-	-	na	-	-	-	na	-	-		
Gross Alpha Activity (pCi/L)	0	-	-	na	-	-	-	na	-	-	na	-	-	-	na	-	-	-	na	-	-		
Beta and Photon Activity (rem/m ³)	0	-	-	na	-	-	-	na	-	-	na	-	-	-	na	-	-	-	na	-	-		
Radium 226 + 228 (pCi/L)	0	-	-	na	-	-	-	na	-	-	na	-	-	-	na	-	-	-	na	-	-		
Uranium (ug/l)	0	-	-	na	-	-	-	na	-	-	na	-	-	-	na	-	-	-	na	-	-		

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations					
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH		
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	4.1E+01	1.0E+01	na	1.1E+04	5.0E+00	1.3E+00	na	4.2E+02	1.0E+01	2.5E+00	na	1.1E+03	1.0E+01	2.5E+00	na	1.1E+03		
Silver	0	1.3E+00	—	na	—	—	2.7E+00	—	na	—	—	3.3E+01	—	na	—	6.7E+01	—	na	—	6.7E+01	—	na	—
Sulfate	0	—	—	na	—	—	—	na	4.0E+01	—	—	—	—	na	—	—	—	—	—	—	—	—	
1,1,2,2-Tetrachloroethane ^c	0	—	—	na	—	—	—	na	2.0E+02	—	—	—	—	na	4.0E+00	—	—	—	—	—	—	2.0E+01	
Tetrachloroethylene ^c	0	—	—	na	—	—	—	na	1.6E+02	—	—	—	—	na	3.3E+00	—	—	—	—	—	—	1.6E+01	
Thallium	0	—	—	na	—	—	—	na	1.2E+00	—	—	—	—	na	4.7E+02	—	—	—	—	—	—	1.2E+01	
Toluene	0	—	—	na	6.0E+03	—	—	na	1.6E+04	—	—	—	—	na	6.0E+02	—	—	—	—	—	—	na	
Total dissolved solids	0	—	—	na	—	—	—	na	—	—	—	—	—	na	—	—	—	—	—	—	—	na	
Toxaphene ^c	0	7.3E+01	2.0E+04	na	2.8E+03	1.5E+00	4.1E+04	na	1.4E+02	1.8E+01	5.0E+05	na	2.8E+04	3.7E+01	1.0E+04	na	1.4E+03	3.7E+01	1.0E+04	na	1.4E+03		
Tributyltin	0	4.6E+01	7.2E+02	na	—	9.4E+01	1.5E+01	na	—	1.2E+01	1.8E+02	na	—	2.3E+01	3.7E+02	na	—	2.3E+01	3.7E+02	na	—	2.3E+01	
1,2,4-Trichlorobenzene	0	—	—	na	7.0E+01	—	—	na	1.8E+02	—	—	na	7.0E+00	—	—	na	1.8E+01	—	—	na	1.8E+01	—	
1,2,3-Trichloroethane ^c	0	—	—	na	1.6E+02	—	—	na	7.9E+02	—	—	na	1.6E+01	—	—	na	7.9E+01	—	—	na	7.9E+01	—	
Trichloroethylene ^c	0	—	—	na	3.0E+02	—	—	na	1.5E+03	—	—	na	3.0E+01	—	—	na	1.5E+02	—	—	na	1.5E+02	—	
2,4,6-Trichlorophenol ^c	0	—	—	na	2.4E+01	—	—	na	1.2E+02	—	—	na	2.4E+00	—	—	na	1.2E+01	—	—	na	1.2E+01	—	
2-(2,4,5-Trichlorophenoxy) propanoic acid (Silvex) ^c	0	—	—	na	—	—	—	na	—	—	—	na	—	—	—	na	—	—	—	na	—	na	
Vinyl Chloride ^c	0	—	—	na	2.4E+01	—	—	na	1.2E+02	—	—	na	2.4E+00	—	—	na	1.2E+01	—	—	na	1.2E+01	—	
Zinc	2.2	7.3E+01	7.4E+01	na	2.6E+04	1.5E+02	1.5E+02	na	6.8E+04	2.0E+01	2.0E+01	na	2.6E+03	3.8E+01	3.8E+01	na	6.8E+03	3.8E+01	3.8E+01	na	6.8E+03		

Notes:

1. All concentrations expressed as micrograms/filter (ug/l), unless noted otherwise

2. Discharge flow is highest monthly average or Form C maximum for industries and design flow for Municipal

3. Metals measured as Dissolved, unless specified otherwise

4. "C" indicates a carcinogenic parameter

5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.

Antidegradation WLAs are based upon a complete mix.

6. Antidegradation Baseline = $(0.25(\text{WQC} - \text{background conc.}) + \text{background conc.})$ for acute and chronic

= $(0.1(\text{WQC} - \text{background conc.}) + \text{background conc.})$ for human health

7. WLAs established at the following stream flows: 1Q10 for Acute, 3Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 3Q05 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to 1 and 100% mix.

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Metal	Target Value (SSTV)
Antimony	1.7E+02
Arsenic	4.6E+01
Barium	na
Cadmium	2.2E+01
Chromium III	1.4E+01
Chromium VI	3.3E+00
Copper	1.7E+00
Iron	na
Lead	2.0E+00
Manganese	na
Mercury	2.4E-01
Nickel	4.0E+00
Selenium	1.5E+00
Silver	2.7E-01
Zinc	1.5E+01

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name:

Primland Resort WWTP

Receiving Stream:

UT to Bent Springs Branch

Permit No.: V/A0092207

@ Discharge Point T

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information	
Mean Hardness (as CaCO ₃) =	16 mg/L
90% Temperature (Annual) =	21.8 deg C
90% Temperature (Wet season) =	17.3 deg C
90% Maximum pH =	7.5 SU
10% Maximum pH =	6.9 SU
Tier Designation (1 or 2) =	1
Public Water Supply (PWS) Y/N? =	n
Trout Present Y/N? =	n
Early Life Stages Present Y/N? =	n

Stream Flows	
1Q10 (Annual) =	0 MGD
7Q10 (Annual) =	0 MGD
30Q10 (Annual) =	0 MGD
1Q10 (Wet season) =	0 MGD
30Q10 (Wet season) =	0 MGD
30Q5 =	0 MGD
Harmonic Mean =	0 MGD

Mixing Information	
Annual - 1Q10 Mix =	100 %
- 7Q10 Mix =	100 %
- 30Q10 Mix =	100 %
Wet Season - 1Q10 Mix =	100 %
- 30Q10 Mix =	100 %

Effluent Information	
Mean Hardness (as CaCO ₃) =	100 mg/L
90% Temp (Annual) =	18.8 deg C
90% Temp (Wet season) =	17.2 deg C
90% Maximum pH =	8.4 SU
10% Maximum pH =	7.8 SU
Discharge Flow =	0.0866 MGD

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria	Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations			
			Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	HH
Aceanthrene	5	-	na	9.5E+02	-	na	9.9E+02	-	-	-	-	-	-	na	9.9E+02
Acrolein	0	-	na	9.3E+00	-	na	9.3E+00	-	-	-	-	-	-	na	9.3E+00
Acrylonitrile ^c	0	-	na	2.5E+00	-	na	2.5E+00	-	-	-	-	-	-	na	2.5E+00
Aldrin ^c	0	3.0E+00	-	na	5.0E-04	3.0E+00	-	na	5.0E-04	-	-	3.0E+00	-	na	5.0E-04
Ammonia-N (mg/l) (Yearly)	0	3.88E+00	9.79E-01	na	-	3.88E+00	9.79E-01	na	-	-	-	3.88E+00	9.79E-01	na	-
Ammonia-N (mg/l) (High Flow)	0	3.88E+00	1.09E+00	na	-	3.88E+00	1.09E+00	na	-	-	-	3.88E+00	1.09E+00	na	-
Anthracene	0	-	na	4.0E+04	-	na	4.0E+04	-	-	-	-	-	-	na	4.0E+04
Antimony	0.12	-	na	6.4E+02	-	na	6.4E+02	-	-	-	-	-	-	na	6.4E+02
Arsenic	0.45	3.4E+02	1.5E+02	na	-	3.4E+02	1.5E+02	na	-	-	-	3.4E+02	1.5E+02	na	-
Barium	52	-	na	-	-	na	-	-	-	-	-	-	-	na	-
Benzene ^c	0	-	na	5.1E+02	-	na	5.1E+02	-	-	-	-	-	-	na	5.1E+02
Benzidine ^c	0	-	na	2.0E-03	-	na	2.0E-03	-	-	-	-	-	-	na	2.0E-03
Benzo (a) anthracene ^c	0	-	na	1.8E-01	-	na	1.8E-01	-	-	-	-	-	-	na	1.8E-01
Benzo (b) fluoranthene ^c	0	-	na	1.8E-01	-	na	1.8E-01	-	-	-	-	-	-	na	1.8E-01
Benzo (K) fluoranthene ^c	0	-	na	1.8E-01	-	na	1.8E-01	-	-	-	-	-	-	na	1.8E-01
Benzo (a) pyrene ^c	0	-	na	1.4E+03	-	na	1.4E+03	-	-	-	-	-	-	na	1.4E+03
Bis2-Chloroethyl Ether ^c	0	-	na	5.3E+00	-	na	5.3E+00	-	-	-	-	-	-	na	5.3E+00
Bis2-Chloroisopropyl Ether	0	-	na	6.5E-04	-	na	6.5E-04	-	-	-	-	-	-	na	6.5E-04
Bis 2-Ethylhexyl Phthalate ^c	0	-	na	2.2E+01	-	na	2.2E+01	-	-	-	-	-	-	na	2.2E+01
Bromotform ^c	0	-	na	1.4E+03	-	na	1.4E+03	-	-	-	-	-	-	na	1.4E+03
Butylbenzylphthalate	0	-	na	1.9E+03	-	na	1.9E+03	-	-	-	-	-	-	na	1.9E+03
Cadmium	0	3.9E+00	1.1E+00	na	-	3.9E+00	1.1E+00	na	-	-	-	3.9E+00	1.1E+00	na	-
Carbon Tetrachloride ^c	0	-	na	1.6E+01	-	na	1.6E+01	-	-	-	-	-	-	na	1.6E+01
Chlordane ^c	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	-	-	2.4E+00	4.3E-03	na	8.1E-03
Chloride	0	8.6E+06	2.3E+05	na	-	8.6E+05	2.3E+05	na	-	-	-	-	-	na	8.6E+06
TRC	0	1.9E+01	1.1E+01	na	-	1.9E+01	1.1E+01	na	-	-	-	-	-	na	1.9E+01
Chlorobenzene	0	-	na	1.6E+03	-	na	1.6E+03	-	-	-	-	-	-	na	1.6E+03

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Chlorodibromomethane ^c	0	-	-	na	1.3E+02	-	-	na	1.3E+02	-	-	-	-	-	-	1.3E+02
Chloroform	0	-	-	na	1.1E+04	-	-	na	1.1E+04	-	-	-	-	-	-	1.1E+04
2-Chloronaphthalene	0	-	-	na	1.6E+03	-	-	na	1.6E+03	-	-	-	-	-	-	1.6E+03
2-Chlorophenol	0	-	-	na	1.5E+02	-	-	na	1.5E+02	-	-	-	-	-	-	1.5E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	-	8.3E-02	4.1E-02	na	-	-	-	8.3E-02	4.1E-02	na	-	8.3E-02
Chromium III	0	5.7E+02	7.4E+01	na	-	5.7E+02	7.4E+01	na	-	-	-	5.7E+02	7.4E+01	na	-	5.7E+02
Chromium VI	0	1.6E+01	1.1E+01	na	-	1.6E+01	1.1E+01	na	-	-	-	1.6E+01	1.1E+01	na	-	1.6E+01
Chromium, Total	0.13	-	-	1.0E+02	-	-	-	na	-	-	-	-	-	-	-	-
Chrysene ^c	0	0.22	1.3E+01	9.0E+00	na	1.6E+04	1.3E+01	9.0E+00	na	1.8E-02	na	-	-	-	-	1.8E-02
Copper	0	-	-	na	1.8E-02	-	-	na	1.8E-02	-	-	-	-	-	-	na
Cyanide, Free	0	2.2E+01	5.2E+00	na	-	2.2E+01	5.2E+00	na	1.6E+04	-	-	2.2E+01	5.2E+00	na	-	1.6E+04
DDD ^c	0	-	-	na	3.1E-03	-	-	na	3.1E-03	-	-	-	-	-	-	3.1E-03
DDE ^c	0	-	-	na	2.2E-03	-	-	na	2.2E-03	-	-	-	-	-	-	2.2E-03
DDT ^c	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	-	-	1.1E+00	1.0E-03	na	-	2.2E-03
Demetone	0	-	1.0E-01	na	-	-	1.0E-01	na	-	-	-	-	-	-	-	-
Diazinon	0	1.7E-01	1.7E-01	na	-	1.7E-01	1.7E-01	na	-	-	-	1.7E-01	1.7E-01	na	-	-
Dibenz(a,h)anthracene ^c	0	-	-	na	1.8E-01	-	-	na	1.8E-01	-	-	-	-	-	-	-
1,2-Dichlorobenzene	0	-	-	na	1.3E+03	-	-	na	1.3E+03	-	-	-	-	-	-	1.3E+03
1,3-Dichlorobenzene	0	-	-	na	9.6E+02	-	-	na	9.6E+02	-	-	-	-	-	-	9.6E+02
1,4-Dichlorobenzene	0	-	-	na	1.9E+02	-	-	na	1.9E+02	-	-	-	-	-	-	1.9E+02
3,3-Dichlorobenzidine ^c	0	-	-	na	2.8E-01	-	-	na	2.8E-01	-	-	-	-	-	-	2.8E-01
Dichlorobromomethane ^c	0	-	-	na	1.7E+02	-	-	na	1.7E+02	-	-	-	-	-	-	1.7E+02
1,2-Dichloroethane ^c	0	-	-	na	3.7E+02	-	-	na	3.7E+02	-	-	-	-	-	-	3.7E+02
1,1-Dichloroethylene	0	-	-	na	7.1E+03	-	-	na	7.1E+03	-	-	-	-	-	-	7.1E+03
1,2-trans-dichloroethylene	0	-	-	na	1.0E+04	-	-	na	1.0E+04	-	-	-	-	-	-	1.0E+04
2,4-Dichlorophenol	0	-	-	na	2.9E+02	-	-	na	2.9E+02	-	-	-	-	-	-	2.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	-	-	na	-	-	-	na	-	-	-	-	-	-	-	-
1,2-Dichloropropane ^c	0	-	-	na	1.5E+02	-	-	na	1.5E+02	-	-	-	-	-	-	1.5E+02
1,3-Dichloropropene ^c	0	-	-	na	2.1E+02	-	-	na	2.1E+02	-	-	-	-	-	-	2.1E+02
Dieldrin ^c	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	-	-	2.4E-01	5.6E-02	na	-	5.4E-04
Diethyl Phthalate	0	-	-	na	4.4E+04	-	-	na	4.4E+04	-	-	-	-	-	-	4.4E+04
2,4-Dimethylphenol	0	-	-	na	8.5E+02	-	-	na	8.5E+02	-	-	-	-	-	-	8.5E+02
Dimethyl Phthalate	0	-	-	na	1.1E+06	-	-	na	1.1E+06	-	-	-	-	-	-	1.1E+06
Di-n-Butyl Phthalate	0	-	-	na	4.5E+03	-	-	na	4.5E+03	-	-	-	-	-	-	4.5E+03
2,4-Dinitrophenol	0	-	-	na	5.3E+03	-	-	na	5.3E+03	-	-	-	-	-	-	5.3E+03
2-Methyl-4,6-Dinitrophenol	0	-	-	na	2.8E+02	-	-	na	2.8E+02	-	-	-	-	-	-	2.8E+02
2,4-Dinitrotoluene ^c	0	-	-	na	3.4E+01	-	-	na	3.4E+01	-	-	-	-	-	-	3.4E+01
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	-	-	na	5.1E-08	-	-	na	5.1E-08	-	-	-	-	-	-	5.1E-08
1,2-Diphenylhydrazine ^c	0	-	-	na	2.0E+00	-	-	na	2.0E+00	-	-	-	-	-	-	4.4E+04
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	-	-	-	-	-	-	8.5E+02
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	-	-	-	-	-	-	8.5E+02
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	-	-	-	-	-	-	8.5E+02
Endosulfan Sulfate	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	-	-	-	-	-	-	8.9E+01
Endrin	0	-	-	na	3.0E-01	-	-	na	3.0E-01	-	-	-	-	-	-	6.0E-02
Endrin Aldehyde	0	-	-	na	3.0E-01	-	-	na	3.0E-01	-	-	-	-	-	-	3.0E-01

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Ethylbenzene	0	-	-	na	2.1E+03	-	-	2.1E+03	-	-	-	-	-	-	-	2.1E+03
Fluoranthene	0	-	-	na	1.4E+02	-	-	1.4E+02	-	-	-	-	-	-	-	1.4E+02
Fluorene	0	-	-	na	5.3E+03	-	-	5.3E+03	-	-	-	-	-	-	-	5.3E+03
Fragrance Agents	0	-	-	na	-	-	-	na	-	-	-	-	-	-	-	na
Guthion	0	-	1.0E-02	na	-	-	-	1.0E-02	na	-	-	-	-	-	-	na
Heptachlor	c	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	-	-	-	-	-	7.9E-04
Heptachlor Epoxide	c	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	-	-	-	-	-	3.9E-04
Hexachlorobenzene	c	0	-	na	2.9E-03	-	-	na	2.9E-03	-	-	-	-	-	-	2.9E-03
Hexachlorobutadiene	c	0	-	na	1.8E+02	-	-	na	1.8E+02	-	-	-	-	-	-	1.8E+02
Hexachlorocyclohexane		0	-	na	4.9E-02	-	-	na	4.9E-02	-	-	-	-	-	-	4.9E-02
Alpha-BHC	c	0	-	na	-	-	-	na	-	-	-	-	-	-	-	na
Beta-BHC	c	0	-	na	1.7E-01	-	-	na	1.7E-01	-	-	-	-	-	-	1.7E-01
Hexachlorocyclohexane		0	9.5E-01	na	na	1.8E+00	9.5E-01	-	na	1.8E+00	-	-	-	-	-	1.8E+00
Gamma-BHC (Lindane)		0	-	na	1.1E+03	-	-	na	1.1E+03	-	-	-	-	-	-	1.1E+03
Hexachlorocyclopentadiene		0	-	na	3.3E+01	-	-	na	3.3E+01	-	-	-	-	-	-	3.3E+01
Hexachloroethane	c	0	-	2.0E+00	na	-	-	2.0E+00	na	-	-	-	-	-	-	2.0E+00
Hydrogen Sulfide		0	-	na	-	-	-	na	-	-	-	-	-	-	-	na
Indeno (1,2,3-cd) pyrene	c	0	-	na	1.8E-01	-	-	na	1.8E-01	-	-	-	-	-	-	1.8E-01
Iron		0	-	na	-	-	-	na	-	-	-	-	-	-	-	na
Isophorone	c	0	-	na	9.6E+03	-	-	na	9.6E+03	-	-	-	-	-	-	9.6E+03
Kepone		0	-	0.0E+00	na	-	-	0.0E+00	na	-	-	-	-	-	-	na
Lead		0	1.2E+02	1.4E+01	na	-	-	1.2E+02	1.4E+01	na	-	-	-	-	-	1.2E+02
Malathion		0	-	1.0E-01	na	-	-	1.0E-01	na	-	-	-	-	-	-	1.0E-01
Manganese	20	-	0.0E+00	na	-	-	-	0.0E+00	na	-	-	-	-	-	-	0.0E+00
Mercury	0	1.4E+00	7.7E-01	--	na	--	1.4E+00	7.7E-01	--	na	1.4E+00	7.7E-01	--	na	1.4E+00	7.7E-01
Methyl Bromide		0	-	na	1.5E+03	-	-	na	1.5E+03	-	-	-	-	-	-	1.5E+03
Methylene Chloride	c	0	-	na	5.5E+03	-	-	na	5.5E+03	-	-	-	-	-	-	5.5E+03
Methoxychlor		0	-	3.0E-02	na	-	-	3.0E-02	na	-	-	-	-	-	-	3.0E-02
Mirex		0	-	0.0E+00	na	-	-	0.0E+00	na	-	-	-	-	-	-	0.0E+00
Nickel	0.38	1.8E+02	2.0E+01	na	4.6E+03	1.8E+02	2.0E+01	na	4.6E+03	1.8E+02	2.0E+01	1.8E+02	2.0E+01	na	1.8E+02	2.0E+01
Nitrate (as N)	0	-	na	-	na	5.1E+00	-	na	-	na	5.1E+00	-	-	-	-	4.6E+03
Nitrobenzene		0	-	na	6.9E+02	-	-	na	6.9E+02	-	-	-	-	-	-	6.9E+02
N-Nitrosodimethylamine	c	0	-	na	3.0E+01	-	-	na	3.0E+01	-	-	-	-	-	-	3.0E+01
N-Nitrosodiphenylamine	c	0	-	na	6.0E+01	-	-	na	6.0E+01	-	-	-	-	-	-	6.0E+01
N-Nitrosodi-n-propylamine	c	0	-	na	5.1E+00	-	-	na	5.1E+00	-	-	-	-	-	-	5.1E+00
Nonylphenol		0	2.8E+01	6.6E+00	-	-	2.8E+01	6.6E+00	-	na	6.9E+02	-	-	-	-	6.9E+02
Parathion		0	6.5E-02	1.3E-02	na	-	6.5E-02	1.3E-02	na	-	3.0E+01	-	-	-	-	3.0E+01
PCB Total	c	0	-	1.4E-02	na	6.4E-04	-	1.4E-02	na	6.4E-04	-	-	-	-	-	6.4E-04
Pentachlorophenol	c	0	1.9E+01	1.5E+01	na	3.0E+01	1.5E+01	na	3.0E+01	1.5E+01	na	1.9E+01	1.5E+01	na	1.9E+01	1.5E+01
Phenol		0	-	na	8.6E+05	-	-	na	8.6E+05	-	-	-	-	-	-	8.6E+05
Pyrene		0	-	na	4.0E+03	-	-	na	4.0E+03	-	-	-	-	-	-	4.0E+03
Radionuclides		0	-	na	-	-	-	na	-	-	-	-	-	-	-	na
Gross Alpha Activity	(pCi/L)	0	-	na	-	-	-	na	-	-	-	-	-	-	-	3.0E+01
Beta and Photon Activity	(mrem/yr)	0	-	na	-	-	-	na	-	-	-	-	-	-	-	8.6E+05
Radium 226 + 228 (pCi/L)	0	-	na	-	-	-	na	-	-	-	-	-	-	-	-	na
Uranium (ug/l)	0	-	na	-	-	-	na	-	-	-	-	-	-	-	-	na

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	-	-	-	-	-	-	-	2.0E+01	5.0E+00	na	4.2E+03	
Silver	0	3.4E+00	-	na	-	3.4E+00	-	na	-	-	-	-	-	-	-	-	3.4E+00	-	na	-	
Sulfate	0	-	-	na	-	-	-	na	-	-	-	-	-	-	-	-	-	-	-	na	-
1,1,2,2-Tetrachloroethane ^c	0	-	-	na	4.0E+01	-	-	na	4.0E+01	-	-	-	-	-	-	-	-	-	-	4.0E+01	
Tetrachloroethylene ^c	0	-	-	na	3.3E+01	-	-	na	3.3E+01	-	-	-	-	-	-	-	-	-	-	3.3E+01	
Thallium	0	-	-	na	4.7E+01	-	-	na	4.7E+01	-	-	-	-	-	-	-	-	-	-	4.7E+01	
Toluene	0	-	-	na	6.0E+03	-	-	na	6.0E+03	-	-	-	-	-	-	-	-	-	-	6.0E+03	
Total dissolved solids	0	-	-	na	-	-	-	na	-	-	-	-	-	-	-	-	-	-	-	na	-
Toxaphene ^c	0	7.3E+01	2.0E+04	na	2.8E+03	7.3E+01	2.0E+04	na	2.8E+03	-	-	-	-	-	-	-	7.3E+01	2.0E+04	na	2.8E+03	
Tributyltin	0	4.6E+01	7.2E+02	na	-	4.6E+01	7.2E+02	na	-	-	-	-	-	-	-	-	4.6E+01	7.2E+02	na	-	
1,2,4-Trichlorobenzene	0	-	-	na	7.0E+01	-	-	na	7.0E+01	-	-	-	-	-	-	-	-	-	-	7.0E+01	
1,1,2-Trichloroethane ^c	0	-	-	na	1.6E+02	-	-	na	1.6E+02	-	-	-	-	-	-	-	-	-	-	1.6E+02	
Trichloroethylene ^c	0	-	-	na	3.0E+02	-	-	na	3.0E+02	-	-	-	-	-	-	-	-	-	-	3.0E+02	
2,4,6-Trichlorophenol ^c	0	-	-	na	2.4E+01	-	-	na	2.4E+01	-	-	-	-	-	-	-	-	-	-	2.4E+01	
2-(2,4,5-Trichlorophenoxy)propanoic acid (Silvex)	0	-	-	na	-	-	-	na	-	-	-	-	-	-	-	-	-	-	-	na	-
Vinyl Chloride ^c	0	-	-	na	2.4E+01	-	-	na	2.4E+01	-	-	-	-	-	-	-	-	-	-	2.4E+01	
Zinc	2.2	1.2E+02	1.2E+02	na	2.6E+04	1.2E+02	1.2E+02	na	2.6E+04	-	-	-	-	-	-	-	1.2E+02	1.2E+02	na	2.6E+04	

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for industries and design flow for Municipal
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
- Antidegradation WLAs are based upon a complete mix.
- Antidegradation Baseline = 0.25(WQC - background conc.) + background conc., for acute and chronic
 $= 0.1(WQC - \text{background conc.}) + \text{background conc.}$, for human health

- WLAs established at the following stream flows: 1Q10 for Acute, 3Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 3Q10 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)	Metal	Target Value (SSTV)
Antimony	6.4E+02	Antimony	6.4E+02
Arsenic	9.0E+01	Arsenic	9.0E+01
Barium	na	Barium	na
Cadmium	6.8E-01	Cadmium	6.8E-01
Chromium III	4.4E+01	Chromium III	4.4E+01
Chromium VI	6.4E+00	Chromium VI	6.4E+00
Copper	5.4E+00	Copper	5.4E+00
Iron	na	Iron	na
Lead	8.1E+00	Lead	8.1E+00
Manganese	na	Manganese	na
Mercury	4.6E-01	Mercury	4.6E-01
Nickel	1.2E+01	Nickel	1.2E+01
Selenium	3.0E+00	Selenium	3.0E+00
Silver	1.4E+00	Silver	1.4E+00
Zinc	4.7E+01	Zinc	4.7E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name:

Pimland Resort WWTP

Permit No.: WA0092207

Receiving Stream: UT to Bent Springs Branch

DISCHARGE POINT

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Parameter	Background Conc.	Water Quality Criteria		Wasteload Allocations		Antidegradation Baseline		Antidegradation Allocations		Most Limiting Allocations	
(ug/l unless noted)		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic
Mean Hardness (as CaCO3) =	16 mg/L	-	-	na	9.9E+02	-	-	-	-	-	-
90% Temperature (Annual) =	21.8 deg C	-	-	na	9.3E+00	-	-	na	9.3E+00	na	9.3E+00
90% Temperature (Wet season) =	17.3 deg C	-	-	na	2.5E+00	-	-	na	2.5E+00	na	2.5E+00
90% Maximum pH =	7.5 SU	-	-	na	5.0E-04	-	-	na	5.0E-04	na	5.0E-04
10% Maximum pH =	6.9 SU	-	-	na	3.88E+00	9.79E-01	na	-	-	3.88E+00	9.79E-01
Tier Designation (1 or 2) =	1	-	-	na	3.88E+00	1.09E+00	na	3.88E+00	1.09E+00	na	-
Public Water Supply (PWS) Y/N? =	n	-	-	na	4.0E+04	-	-	-	-	na	4.0E+04
Trout Present Y/N? =	n	-	-	na	6.4E+02	-	-	na	6.4E+02	na	6.4E+02
Early Life Stages Present Y/N? =	n	-	-	na	3.4E+02	1.5E+02	na	-	-	3.4E+02	1.5E+02
Aceanaphthalene	5	-	-	na	9.9E+02	-	-	na	9.9E+02	-	-
Acrolein	0	-	-	na	9.3E+00	-	-	na	9.3E+00	-	-
Acrylonitrile ^c	0	-	-	na	2.5E+00	-	-	na	2.5E+00	-	-
Aldrin ^c	0	3.0E+00	-	na	5.0E-04	3.0E+00	-	na	5.0E-04	-	-
Ammonia-N (mg/l) (Yearly)	0	3.88E+00	9.79E-01	na	-	3.88E+00	9.79E-01	na	-	-	-
Ammonia-N (mg/l) (High Flow)	0	3.88E+00	1.09E+00	na	-	3.88E+00	1.09E+00	na	-	-	-
Anthracene	0	-	-	na	4.0E+04	-	-	na	4.0E+04	-	-
Antimony	0.12	-	-	na	6.4E+02	-	-	na	6.4E+02	-	-
Arsenic	0.45	3.4E+02	1.5E+02	na	-	3.4E+02	1.5E+02	na	-	-	-
Barium	52	-	-	na	-	-	-	na	-	-	-
Benzene ^c	0	-	-	na	5.1E+02	-	-	na	5.1E+02	-	-
Benzidine ^c	0	-	-	na	2.0E-03	-	-	na	2.0E-03	-	-
Benzo (a) anthracene ^c	0	-	-	na	1.8E-01	-	-	na	1.8E-01	-	-
Benzo (b) fluoranthene ^c	0	-	-	na	1.8E-01	-	-	na	1.8E-01	-	-
Benzo (K) fluoranthene ^c	0	-	-	na	1.8E-01	-	-	na	1.8E-01	-	-
Benzo (a) pyrene ^c	0	-	-	na	1.8E-01	-	-	na	1.8E-01	-	-
Bis2-Chloroethyl Ether ^c	0	-	-	na	5.3E+00	-	-	na	5.3E+00	-	-
Bis2-Chloroethyl Propyl Ether	0	-	-	na	6.5E+04	-	-	na	6.5E+04	-	-
Bis 2-Ethyhexyl Phthalate ^c	0	-	-	na	2.2E+01	-	-	na	2.2E+01	-	-
Bromoforn ^c	0	-	-	na	1.4E+03	-	-	na	1.4E+03	-	-
Bulybenzylphthalate	0	-	-	na	1.9E+03	-	-	na	1.9E+03	-	-
Cadmium	0	3.9E+00	1.1E+00	na	-	3.9E+00	1.1E+00	na	-	-	-
Carbon Tetrachloride ^c	0	-	-	na	1.6E+01	-	-	na	1.6E+01	-	-
Chlordane ^c	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	-	-
Chloride	0	8.6E+05	2.3E+05	na	-	8.6E+05	2.3E+05	na	-	8.6E+05	2.3E+05
TRC	0	1.9E+01	1.1E+01	na	-	1.9E+01	1.1E+01	na	-	1.9E+01	1.1E+01
Chlorobenzene	0	-	-	na	1.6E+03	-	-	na	1.6E+03	-	-

Stream Flows		Mixing Information		Effluent Information	
1Q10 (Annual) =	0 MGD	Annual - 1Q10 Mix =	100 %	Mean Hardness (as CaCO3) =	100 mg/L
7Q10 (Annual) =	0 MGD	- 7Q10 Mix =	100 %	90% Temp (Annual) =	18.8 deg C
30Q10 (Annual) =	0 MGD	- 30Q10 Mix =	100 %	90% Temp (Wet season) =	17.2 deg C
1Q10 (Wet season) =	0 MGD	Wet Season - 1Q10 Mix =	100 %	90% Maximum pH =	8.4 SU
30Q10 (Wet season) =	0 MGD	- 30Q10 Mix =	100 %	10% Maximum pH =	7.8 SU
30Q5 =	0 MGD			Discharge Flow =	0.13 MGD
Harmonic Mean =	0 MGD				

Trout Present Y/N? =

n

Early Life Stages Present Y/N? =

n

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)
Chlorodibromomethane ^c	0	-	-	na	1.3E+02	-	-	na	1.3E+02	-	-	-	-	-	-	1.3E+02
Chloroform	0	-	-	na	1.1E+04	-	-	na	1.1E+04	-	-	-	-	-	-	1.1E+04
2-Chlorophthalene	0	-	-	na	1.6E+03	-	-	na	1.6E+03	-	-	-	-	-	-	1.6E+03
2-Chlorophenol	0	-	-	na	1.5E+02	-	-	na	1.5E+02	-	-	-	-	-	-	1.5E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	-	8.3E-02	4.1E-02	na	-	-	-	-	-	-	-	8.3E-02
Chromium III	0	5.7E+02	7.4E+01	na	-	5.7E+02	7.4E+01	na	-	-	-	-	-	-	-	5.7E+02
Chromium VI	0	1.6E+01	1.1E+01	na	-	1.6E+01	1.1E+01	na	-	-	-	-	-	-	-	1.6E+01
Chromium, Total	0.13	-	-	1.0E+02	-	-	-	na	1.8E-02	-	-	-	-	-	-	1.1E+01
Chrysene ^c	0	-	-	na	1.8E-02	-	-	na	1.8E-02	-	-	-	-	-	-	1.8E-02
Copper	0.22	1.3E+01	9.0E+00	na	-	1.3E+01	9.0E+00	na	-	-	-	-	-	-	-	1.8E-02
Cyanide, Free	0	2.2E+01	5.2E+00	na	-	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	-	-	-	-	-	1.6E+04
DDD ^c	0	-	-	na	3.1E-03	-	-	na	3.1E-03	-	-	-	-	-	-	3.1E-03
DDE ^c	0	-	-	na	2.2E-03	-	-	na	2.2E-03	-	-	-	-	-	-	2.2E-03
DDT ^c	0	1.1E+00	1.0E-03	na	2.2E-03	-	-	na	2.2E-03	-	-	-	-	-	-	2.2E-03
Dameton	0	-	-	1.0E-01	na	-	-	na	1.0E-01	na	-	-	-	-	-	1.0E-01
Diazinon	0	1.7E-01	1.7E-01	na	-	1.7E-01	1.7E-01	na	-	-	-	-	-	-	-	1.7E-01
Dibenz(a,h)anthracene ^c	0	-	-	na	1.8E-01	-	-	na	1.8E-01	-	-	-	-	-	-	1.8E-01
1,2-Dichlorobenzene	0	-	-	na	1.3E-03	-	-	na	1.3E-03	-	-	-	-	-	-	1.3E-03
1,3-Dichlorobenzene	0	-	-	na	9.6E-02	-	-	na	9.6E-02	-	-	-	-	-	-	9.6E-02
1,4-Dichlorobenzene	0	-	-	na	1.5E+02	-	-	na	1.9E+02	-	-	-	-	-	-	1.9E+02
3,3-Dichloropropidine ^c	0	-	-	na	2.8E-01	-	-	na	2.8E-01	-	-	-	-	-	-	2.8E-01
Dichlorodibromomethane ^c	0	-	-	na	1.7E+02	-	-	na	1.7E+02	-	-	-	-	-	-	1.7E+02
1,2-Dichloroethane ^c	0	-	-	na	3.7E+02	-	-	na	3.7E+02	-	-	-	-	-	-	3.7E+02
1,1-Dichloroethylene	0	-	-	na	7.1E+03	-	-	na	7.1E+03	-	-	-	-	-	-	7.1E+03
1,2-trans-dichloroethylene	0	-	-	na	1.0E+04	-	-	na	1.0E+04	-	-	-	-	-	-	1.0E+04
2,4-Dichlorophenol	0	-	-	na	2.9E+02	-	-	na	2.9E+02	-	-	-	-	-	-	2.9E+02
2,4-Dichlorophenoxyacetic acid (2,4-D)	0	-	-	na	-	-	-	na	-	-	-	-	-	-	-	-
1,2-Dichloropropane ^c	0	-	-	na	1.5E+02	-	-	na	1.5E+02	-	-	-	-	-	-	1.5E+02
1,3-Dichloropropene ^c	0	-	-	na	2.1E+02	-	-	na	2.1E+02	-	-	-	-	-	-	2.1E+02
Dieldrin ^c	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	-	-	-	-	-	-	5.4E-04
Diethyl Phthalate	0	-	-	na	4.4E-04	-	-	na	4.4E-04	-	-	-	-	-	-	4.4E-04
2,4-Dimethylphenol	0	-	-	na	8.5E+02	-	-	na	8.5E+02	-	-	-	-	-	-	8.5E+02
Dimethyl Phthalate	0	-	-	na	1.1E+06	-	-	na	1.1E+06	-	-	-	-	-	-	1.1E+06
Di-n-Butyl Phthalate	0	-	-	na	4.5E+03	-	-	na	4.5E+03	-	-	-	-	-	-	4.5E+03
2,4-Dinitrophenol	0	-	-	na	5.3E+03	-	-	na	5.3E+03	-	-	-	-	-	-	5.3E+03
2-Methyl-4,6-Dinitrophenol	0	-	-	na	2.8E+02	-	-	na	2.8E+02	-	-	-	-	-	-	2.8E+02
2,4-Dinitrotoluene ^c	0	-	-	na	3.4E+01	-	-	na	3.4E+01	-	-	-	-	-	-	3.4E+01
Dioxin 2,3,7,8-Tetrachlorodibenzo-p-dioxin	0	-	-	na	5.1E-08	-	-	na	5.1E-08	-	-	-	-	-	-	5.1E-08
1,2-Diphenylhydrazine ^c	0	-	-	na	2.0E+00	-	-	na	2.0E+00	-	-	-	-	-	-	2.0E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	8.9E+01
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	8.9E+01
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	-	8.9E+01	-	-	na	8.9E+01	-	-	-	-	-	-	-
Endosulfan Sulfate	0	-	-	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	8.9E+01	-	-	8.9E+01
Endrin	0	8.6E-02	3.6E-02	na	3.0E-01	-	-	na	3.0E-01	-	-	-	-	-	-	6.0E-02
Endrin Aldehyde	0	-	-	na	3.0E-01	-	-	na	3.0E-01	-	-	-	-	-	-	3.0E-01

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)
Ethylbenzene	0	-	-	na	2.1E+03	-	-	na	2.1E+03	-	-	-	-	-	2.1E+03	-
Fluoranthene	0	-	-	na	1.4E+02	-	-	na	1.4E+02	-	-	-	-	-	1.4E+02	-
Fluorene	0	-	-	na	5.3E+03	-	-	na	5.3E+03	-	-	-	-	-	5.3E+03	-
Fragrance Agents	0	-	-	na	-	-	-	na	-	-	-	-	-	-	-	-
Guthion	0	-	1.0E-02	na	-	-	-	na	1.0E-02	na	-	-	-	-	-	-
Heptachlor	c	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	-	-	-	-	-	-
Heptachlor Epoxide	c	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	-	-	-	-	-	-
Hexachlorobenzene	c	0	-	na	2.9E-03	-	-	na	2.9E-03	-	-	-	-	-	-	-
Hexachlorobutadiene	c	0	-	na	1.8E+02	-	-	na	1.8E+02	-	-	-	-	-	-	-
Hexachlorocyclohexane		0	-	na	4.9E-02	-	-	na	4.9E-02	-	-	-	-	-	-	-
Alpha-BHC	c	0	-	na	-	-	-	na	-	-	-	-	-	-	-	-
Hexachlorocyclohexane		0	-	na	1.7E-01	-	-	na	1.7E-01	-	-	-	-	-	-	-
Beta-BHC	c	0	-	na	1.8E+00	9.5E-01	-	na	1.8E+00	-	-	-	-	-	-	-
Hexachlorocyclohexane		0	9.5E-01	na	1.1E+03	-	-	na	1.1E+03	-	-	-	-	-	-	-
Gamma-BHC (Lindane)		0	-	na	3.3E+01	-	-	na	3.3E+01	-	-	-	-	-	-	-
Hexachlorocyclopentadiene		0	-	na	2.0E+00	na	-	na	2.0E+00	na	-	-	-	-	-	-
Hexachloroethane	c	0	-	na	-	-	-	na	-	-	-	-	-	-	-	-
Hydrogen Sulfide		0	-	na	1.8E-01	-	-	na	1.8E-01	-	-	-	-	-	-	-
Indane (1,2,3-cd) pyrene	c	0	-	na	-	-	-	na	-	-	-	-	-	-	-	-
Iron		0	-	na	-	-	-	na	-	-	-	-	-	-	-	-
Isophorone	c	0	-	na	9.6E+03	-	-	na	9.6E+03	-	-	-	-	-	-	-
Kepone		0	-	0.0E+00	na	-	-	na	-	-	-	-	-	-	-	-
Lead		0	1.2E+02	1.4E+01	na	-	-	0.0E+00	na	-	-	-	-	-	-	-
Malathion		0	-	1.0E-01	na	-	-	1.2E+02	1.4E+01	na	-	-	-	-	-	-
Manganese	20	0	-	7.7E-01	--	-	-	1.4E+00	7.7E-01	--	-	-	-	-	-	-
Mercury	0	-	1.4E+00	7.7E-01	--	-	-	1.4E+00	7.7E-01	--	-	-	-	-	-	-
Methyl Bromide		0	-	na	1.5E+03	-	-	na	1.5E+03	-	-	-	-	-	-	-
Methylene Chloride	c	0	-	na	5.9E+03	-	-	na	5.9E+03	-	-	-	-	-	-	-
Methoxychlor		0	-	3.0E-02	na	-	-	3.0E-02	na	-	-	-	-	-	-	-
Mirex		0	-	0.0E+00	na	-	-	0.0E+00	na	-	-	-	-	-	-	-
Nickel	0.38	1.8E+02	2.0E+01	na	4.6E+03	1.8E+02	2.0E+01	na	4.6E+03	-	-	-	-	-	-	-
Nitrate (as N)	0	-	na	-	5.1E+00	-	-	na	-	-	-	-	-	-	-	-
Nitrobenzene		0	-	na	6.9E+02	-	-	na	6.9E+02	-	-	-	-	-	-	-
N-Nitrosodimethylamine	c	0	-	na	3.0E+01	-	-	na	3.0E+01	-	-	-	-	-	-	-
N-Nitrosodiphenylamine	c	0	-	na	6.0E+01	-	-	na	6.0E+01	-	-	-	-	-	-	-
N-Nitrosodi-n-propylamine	c	0	2.8E+01	6.6E+00	--	-	-	2.8E+01	6.6E+00	na	-	-	-	-	-	-
Nonylphenol		0	6.5E-02	1.3E-02	na	-	-	6.5E-02	1.3E-02	na	-	-	-	-	-	-
Parathion		0	-	1.4E-02	na	6.4E-04	-	1.4E-02	na	6.4E-04	-	-	-	-	-	-
PCB Total	c	0	1.9E+01	1.5E+01	na	3.0E+01	1.9E+01	1.5E+01	na	3.0E+01	-	-	-	-	-	-
Pentachlorophenol	c	0	-	na	8.6E+05	-	-	na	8.6E+05	-	-	-	-	-	-	-
Phenol		0	-	na	4.0E+03	-	-	na	4.0E+03	-	-	-	-	-	-	-
Pyrene		0	-	na	-	-	-	na	-	-	-	-	-	-	-	-
Radionuclides		0	-	na	-	-	-	na	-	-	-	-	-	-	-	-
Gross Alpha Activity	(pCi/L)	0	-	na	-	-	-	na	-	-	-	-	-	-	-	-
Beta and Photon Activity	(mrem/yr)	0	-	na	-	-	-	na	-	-	-	-	-	-	-	-
Radium 226 + 228 (pCi/L)	0	-	na	-	-	-	-	na	-	-	-	-	-	-	-	-
Uranium (ug/l)	0	-	na	-	-	-	-	na	-	-	-	-	-	-	-	-

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	-	-	-	-	-	-	-	2.0E+01	5.0E+00	na	4.2E+03	
Silver	0	3.4E+00	-	na	-	3.4E+00	-	na	-	-	-	-	-	-	-	-	3.4E+00	-	na	-	
Sulfate	0	-	-	na	-	-	-	na	-	-	-	-	-	-	-	-	-	-	-	na	-
1,1,2,2-Tetrachloroethane ^c	0	-	-	na	4.0E+01	-	-	na	4.0E+01	-	-	-	-	-	-	-	-	-	-	na	4.0E+01
Tetrachloroethylene ^c	0	-	-	na	3.3E+01	-	-	na	3.3E+01	-	-	-	-	-	-	-	-	-	-	na	3.3E+01
Thallium	0	-	-	na	4.7E+01	-	-	na	4.7E+01	-	-	-	-	-	-	-	-	-	-	na	4.7E+01
Toluene	0	-	-	na	6.0E+03	-	-	na	6.0E+03	-	-	-	-	-	-	-	-	-	-	na	6.0E+03
Total dissolved solids	0	-	-	na	-	-	-	na	-	-	-	-	-	-	-	-	-	-	-	na	-
Toxaphene ^c	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	-	-	-	-	-	-	-	7.3E-01	2.0E-04	na	2.8E-03	
Tributyltin	0	4.5E-01	7.2E-02	na	-	4.6E-01	7.2E-02	na	-	-	-	-	-	-	-	-	4.6E-01	7.2E-02	na	-	
1,2,4-Trichlorobenzene	0	-	-	na	7.0E+01	-	-	na	7.0E+01	-	-	-	-	-	-	-	-	-	-	na	-
1,1,2-Trichloroethane ^c	0	-	-	na	1.6E+02	-	-	na	1.6E+02	-	-	-	-	-	-	-	-	-	-	na	7.0E+01
Trichloroethylene ^c	0	-	-	na	3.0E+02	-	-	na	3.0E+02	-	-	-	-	-	-	-	-	-	-	na	1.6E+02
2,4,6-Trichlorophenol ^c	0	-	-	na	2.4E+01	-	-	na	2.4E+01	-	-	-	-	-	-	-	-	-	-	na	3.0E+02
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	-	-	na	-	-	-	na	-	-	-	-	-	-	-	-	-	-	-	na	2.4E+01
Vinyl Chloride ^c	0	-	-	na	2.1E+01	-	-	na	2.4E+01	-	-	-	-	-	-	-	-	-	-	na	-
Zinc	2.2	1.2E+02	1.2E+02	na	2.6E+04	1.2E+02	1.2E+02	na	2.6E+04	-	-	-	-	-	-	-	1.2E+02	1.2E+02	na	2.6E+04	

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipal
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
- Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = $(0.25(\text{WQC} - \text{background conc.}) + \text{background conc.})$ for acute and chronic
 $= (0.1(\text{WQC} - \text{background conc.}) + \text{background conc.})$ for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+02
Arsenic	9.0E+01
Barium	na
Cadmium	6.8E-01
Chromium III	4.4E+01
Chromium VI	6.4E+00
Copper	5.4E+00
Iron	na
Led	8.1E+00
Manganese	na
Mercury	4.6E-01
Nickel	1.2E+01
Selenium	3.0E+00
Silver	1.4E+00
Zinc	4.7E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name:

Primland Resort WWTP

Permit No.:

VA0092207

Receiving Stream:

UT to Bent Springs Branch

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Version: OWP Guidance Memo 00-2011 (8/24/00)

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	
Aceanaphthene	5	-	-	na	9.9E+02	-	na	2.1E+03	-	na	1.0E+02	-	-	na	2.1E+02	-	
Acrolein	0	-	-	na	9.3E+00	-	na	1.9E+01	-	na	9.3E+01	-	-	na	1.9E+00	-	
Acrylonitrile ^c	0	-	-	na	2.5E+00	-	na	9.0E+00	-	na	2.5E+01	-	-	na	9.0E+01	-	
Aldrin ^c	0	3.0E+00	-	na	5.0E-04	5.1E+00	-	na	1.8E-03	7.5E-01	na	5.0E-05	1.3E+00	-	na	1.8E-04	-
Ammonia-N (mg/l) (Yearly)	0	7.88E+00	2.30E+00	na	-	1.33E+01	4.42E+00	na	-	1.97E+00	5.75E-01	na	-	3.34E+00	1.11E+00	na	-
Ammonia-N (mg/l) (High Flow)	0	9.05E+00	3.05E+00	na	-	1.88E+01	7.75E+00	na	-	2.26E+00	7.64E-01	na	-	4.70E+00	1.94E+00	na	-
Anthracene	0	-	-	na	4.0E+04	-	na	8.3E+04	-	na	4.0E+03	-	-	na	8.3E+03	-	-
Antimony	0.12	-	-	na	6.4E+02	-	na	1.3E+03	-	na	6.4E+01	-	-	na	1.3E+02	-	-
Arsenic	0.45	3.4E+02	1.5E+02	na	-	5.8E+02	2.5E+02	na	-	8.5E+01	3.8E+01	na	-	1.4E+02	6.4E+01	na	-
Barium	92	-	-	na	-	-	na	-	-	na	-	-	-	-	-	-	-
Benzene ^c	0	-	-	na	5.1E+02	-	na	1.8E+03	-	na	5.1E+01	-	-	na	1.8E+02	-	-
Benzidine ^c	0	-	-	na	2.0E-03	-	na	7.2E-03	-	na	2.0E-04	-	-	na	7.2E-04	-	-
Benzo (a) anthracene ^c	0	-	-	na	1.8E-01	-	na	6.5E-01	-	na	1.8E-02	-	-	na	6.5E-02	-	-
Benzo (b) fluoranthene ^c	0	-	-	na	1.8E-01	-	na	6.5E-01	-	na	1.8E-02	-	-	na	6.5E-02	-	-
Benzo (K) fluoranthene ^c	0	-	-	na	1.8E-01	-	na	6.5E-01	-	na	1.8E-02	-	-	na	6.5E-02	-	-
Benzo (a) Pyrene ^c	0	-	-	na	1.8E-01	-	na	5.1E-03	-	na	1.8E-02	-	-	na	6.5E-02	-	-
Bis(2-Chloroethyl) Ether ^c	0	-	-	na	5.3E+00	-	na	1.9E+01	-	na	5.3E-01	-	-	na	5.1E-02	-	-
Bis(2-Chloroisopropyl) Ether	0	-	-	na	6.5E+04	-	na	1.4E+05	-	na	6.5E+03	-	-	na	1.4E+04	-	-
Bis(2-Ethylhexyl) Phthalate ^c	0	-	-	na	2.2E+01	-	na	8.0E+01	-	na	2.2E+00	-	-	na	8.0E+00	-	-
Bromotform ^c	0	-	-	na	1.4E+03	-	na	5.1E+03	-	na	1.4E+02	-	-	na	5.1E+02	-	-
Bulybenzylphthalate	0	-	-	na	1.9E+03	-	na	3.9E+03	-	na	1.9E+02	-	-	na	3.9E+02	-	-
Cadmium	0	2.4E+00	8.1E-01	na	-	4.1E+00	1.4E+00	na	-	6.1E-01	2.0E-01	na	-	1.0E+00	3.4E-01	na	-
Carbon Tetrachloride ^c	0	-	-	na	1.6E+01	-	na	5.8E+01	-	na	1.6E+00	-	-	na	5.8E+00	-	-
Chlordane ^c	0	2.4E+00	4.3E-03	na	8.1E-03	4.1E+00	7.3E-03	na	2.9E-02	6.0E-01	1.1E-03	na	8.1E-04	1.0E+00	1.8E-03	na	5.8E+00
Chloride	0	8.6E+05	2.3E+05	na	-	1.5E+06	3.9E+05	na	-	2.2E+05	5.8E+04	na	-	3.6E+05	9.7E+04	na	-
TRC	0	1.9E+01	1.1E+01	na	-	3.2E+01	1.9E+01	na	-	4.8E+00	2.8E+00	na	-	8.0E+00	4.7E+00	na	-
Chlorobenzene	0	-	-	na	1.6E+03	-	na	3.3E+03	-	na	1.6E+02	-	-	na	3.3E+02	-	-

Stream Information		Stream Flows			Mixing Information			Effluent Information		
Mean Hardness (as CaCO ₃) =	16 mg/L	1Q10 (Annual) =	0.09 MGD	Annual - 1Q10 Mix =	100 %	100 %	100 %	Mean Hardness (as CaCO ₃) =	100 mg/L	100 mg/L
90% Temperature (Annual) =	21.8 deg C	7Q10 (Annual) =	0.09 MGD	- 7Q10 Mix =	100 %	100 %	100 %	90% Temp (Annual) =	18.8 deg C	18.8 deg C
90% Temperature (Wet season) =	17.3 deg C	3Q10 (Annual) =	0.12 MGD	- 3Q10 Mix =	100 %	100 %	100 %	90% Temp (Wet season) =	17.2 deg C	17.2 deg C
90% Maximum pH =	7.5 SU	1Q10 (Wet season) =	0.14 MGD	Wet Season - 1Q10 Mix =	100 %	100 %	100 %	90% Maximum pH =	8.4 SU	8.4 SU
10% Maximum pH =	6.9 SU	3Q010 (Wet season) =	0.2 MGD	- 3Q10 Mix =	100 %	100 %	100 %	10% Maximum pH =	7.8 SU	7.8 SU
Tier Designation (1 or 2) =	2	3Q05 =	0.14 MGD	Discharge Flow =	0.13 MGD					
Public Water Supply (PWS) Y/N? =	n	Harmonic Mean =	0.34 MGD							
Trout Present Y/N? =	y									
Early Life Stages Present Y/N? =	y									

Effluent Information

Mean Hardness (as CaCO₃) = 100 mg/L
 90% Temp (Annual) = 18.8 deg C
 90% Temp (Wet season) = 17.2 deg C
 90% Maximum pH = 8.4 SU
 10% Maximum pH = 7.8 SU
 Discharge Flow = 0.13 MGD

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic		
Chlorodibromomethane ^c	0	-	-	1.2E+02	-	-	-	4.7E-02	-	-	-	1.3E+01	-	-	-	4.7E+01	--	--	na	4.7E+01	
Chloroform	0	-	-	1.1E+04	-	-	-	2.3E+04	-	-	-	1.1E+03	-	-	-	2.3E+03	--	--	na	2.3E+03	
2-Chloronaphthalene	0	-	-	1.6E+03	-	-	-	3.3E+03	-	-	-	1.6E+02	-	-	-	3.3E+02	--	--	na	3.3E+02	
2-Chlorophenol	0	-	-	1.5E+02	-	-	-	3.1E+02	-	-	-	1.5E+01	-	-	-	3.1E+01	--	--	na	3.1E+01	
Chlorpyrifos	0	8.3E-02	4.1E-02	na	-	1.4E-01	6.9E-02	na	-	2.1E-02	1.0E-02	na	-	3.5E-02	1.7E-02	na	-	3.5E-02	1.7E-02	na	--
Chromium III	0	4.0E+02	5.2E+01	na	-	6.8E+02	8.9E+01	na	-	1.0E+02	1.3E+01	na	-	1.7E+02	2.2E+01	na	-	1.7E+02	2.2E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	-	2.7E+01	1.9E+01	na	-	4.0E+00	2.8E+00	na	-	6.8E+00	4.7E+00	na	-	6.8E+00	4.7E+00	na	--
Chromium, Total	0.13	-	-	1.0E+02	-	-	-	na	-	-	-	1.0E+01	-	-	-	2.1E+01	-	-	na	2.1E+01	
Chrysene ^c	0	-	-	1.9E-02	-	-	-	na	6.5E-02	-	-	4.0E+00	1.7E+00	na	-	4.0E+00	2.8E+00	na	-	4.0E+00	2.8E+00
Copper	0.22	9.0E+00	6.2E+00	na	-	1.5E+01	1.0E+01	na	-	2.4E+00	5.5E+00	na	3.3E+00	1.3E+00	9.3E+00	2.2E+00	na	3.3E+00	2.2E+00	na	3.3E+00
Cyanide, Free	0	2.2E+01	5.2E+00	na	-	1.6E+04	3.7E+01	8.8E+00	na	3.1E-02	1.1E-02	na	3.1E-04	-	-	na	6.5E-03	--	na	6.5E-03	
DDD ^c	0	-	-	na	3.1E-03	-	-	na	8.0E-03	-	-	na	2.2E-04	-	-	na	8.0E-04	--	na	8.0E-04	
DDE ^c	0	-	-	na	2.2E-03	-	-	na	8.0E-03	-	-	na	2.2E-04	-	-	na	8.0E-04	--	na	8.0E-04	
DDT ^c	0	1.1E+00	1.0E-03	na	2.2E-03	1.9E+00	1.7E-03	na	2.8E-01	2.5E-04	na	2.2E-04	4.7E-01	4.2E-04	na	4.7E-01	4.2E-04	na	4.7E-01	4.2E-04	
Demeton	0	-	-	1.0E-01	na	-	-	1.7E-01	na	-	-	2.5E-02	na	-	-	4.2E-02	na	-	na	4.2E-02	
Diazinon	0	1.7E-01	1.7E-01	na	-	2.9E-01	2.9E-01	na	-	4.3E-02	4.3E-02	na	-	7.2E-02	7.2E-02	na	-	7.2E-02	7.2E-02	na	--
Dibenz(a,h)anthracene ^c	0	-	-	1.8E-01	-	-	-	na	6.5E-01	-	-	na	1.8E-02	-	-	na	6.5E-02	--	na	6.5E-02	
1,2-Dichlorobenzene	0	-	-	1.3E+03	-	-	-	na	2.7E+03	-	-	na	1.3E+02	-	-	na	2.7E+02	--	na	2.7E+02	
1,3-Dichlorobenzene	0	-	-	9.6E+02	-	-	-	na	2.0E+03	-	-	na	9.6E+01	-	-	na	2.0E+02	--	na	2.0E+02	
1,4-Dichlorobenzene	0	-	-	1.9E+02	-	-	-	na	3.9E+02	-	-	na	1.9E+01	-	-	na	3.9E+01	--	na	3.9E+01	
3,3-Dichlorobenzidine ^c	0	-	-	2.8E-01	-	-	-	na	1.0E+00	-	-	na	2.8E-02	-	-	na	1.0E-01	--	na	1.0E-01	
Dichlorobromomethane	0	-	-	1.7E+02	-	-	-	na	6.1E+02	-	-	na	1.7E+01	-	-	na	6.1E+01	--	na	6.1E+01	
1,2-Dichloroethane ^c	0	-	-	3.7E+02	-	-	-	na	1.3E-03	-	-	na	3.7E+01	-	-	na	1.3E+02	--	na	1.3E+02	
1,1-Dichloroethylene	0	-	-	7.1E+03	-	-	-	na	1.5E+04	-	-	na	7.1E+02	-	-	na	1.5E+03	--	na	1.5E+03	
1,2-trans-dichloroethylene	0	-	-	1.0E+04	-	-	-	na	2.1E+04	-	-	na	1.0E+03	-	-	na	2.1E+03	--	na	2.1E+03	
2,4-Dichlorophenol	0	-	-	2.9E+02	-	-	-	na	6.0E+02	-	-	na	2.9E+01	-	-	na	6.0E+01	--	na	6.0E+01	
2,4-Dichlorophenoxyacetic acid (2,4-D)	0	-	-	na	-	-	-	na	-	-	-	na	-	-	-	na	-	--	na	--	
1,2-Dichloropropane ^c	0	-	-	1.5E+02	-	-	-	na	5.4E+02	-	-	na	1.5E+01	-	-	na	5.4E+01	--	na	5.4E+01	
1,3-Dichloropropene ^c	0	-	-	2.1E+02	-	-	-	na	7.6E+02	-	-	na	2.1E+01	-	-	na	7.6E+01	--	na	7.6E+01	
Dieldrin ^c	0	2.4E-01	5.6E-02	na	5.6E-04	4.1E-01	9.5E-02	na	2.0E-03	6.0E-02	na	5.6E-05	1.0E-01	2.4E-02	na	2.0E-04	1.0E-01	2.4E-02	na	2.0E-04	
Diethyl Phthalate	0	-	-	4.4E+04	-	-	-	na	9.1E+04	-	-	na	4.4E+03	-	-	na	9.1E+03	--	na	9.1E+03	
2,4-Dimethylphenol	0	-	-	8.5E+02	-	-	-	na	1.8E+03	-	-	na	8.5E+01	-	-	na	1.8E+02	--	na	1.8E+02	
Dimethyl Phthalate	0	-	-	1.1E+06	-	-	-	na	2.3E+06	-	-	na	1.1E+05	-	-	na	2.3E+05	--	na	2.3E+05	
Di-n-Butyl Phthalate	0	-	-	4.5E+03	-	-	-	na	9.3E+03	-	-	na	4.5E+02	-	-	na	9.3E+02	--	na	9.3E+02	
2,4-Dinitrophenol	0	-	-	5.3E+03	-	-	-	na	1.1E+04	-	-	na	5.3E+02	-	-	na	1.1E+03	--	na	1.1E+03	
2-Methyl-4,6-Dinitrophenol	0	-	-	2.8E+02	-	-	-	na	5.8E+02	-	-	na	2.8E+01	-	-	na	5.8E+01	--	na	5.8E+01	
2,4-Dinitrotoluene ^c	0	-	-	3.4E+01	-	-	-	na	1.2E+02	-	-	na	3.4E+00	-	-	na	1.2E+01	--	na	1.2E+01	
Dioxin 2,3,7,8-Tetrachlorodibenzo-p-dioxin	0	-	-	5.1E-08	-	-	-	na	1.1E-07	-	-	na	5.1E-09	-	-	na	1.1E-08	--	na	1.1E-08	
1,2-Diphenylhydrazine ^c	0	-	-	2.0E+00	-	-	-	na	7.2E+00	-	-	na	2.0E-01	-	-	na	7.2E-01	--	na	7.2E-01	
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	3.7E-01	9.5E-02	na	1.8E+02	5.5E-02	1.4E-02	na	8.9E+00	9.3E-02	2.4E-02	na	1.8E+01	9.3E-02	2.4E-02	na	1.8E+01
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	3.7E-01	9.5E-02	na	1.8E+02	5.5E-02	1.4E-02	na	8.9E+00	9.3E-02	2.4E-02	na	1.8E+01	9.3E-02	2.4E-02	na	1.8E+01
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	3.7E-01	9.5E-02	na	1.8E+02	5.5E-02	1.4E-02	na	8.9E+00	9.3E-02	2.4E-02	na	1.8E+01	9.3E-02	2.4E-02	na	1.8E+01
Endosulfan Sulfate	0	8.6E-02	3.6E-02	na	6.0E-02	1.5E-01	6.1E-02	na	1.2E-01	2.2E-02	9.0E-03	na	6.0E-03	3.6E-02	1.5E-02	na	1.2E-02	3.6E-02	1.5E-02	na	1.2E-02
Endrin	0	-	-	3.0E-01	-	-	-	na	6.2E-01	-	-	na	3.0E-02	-	-	na	6.2E-02	-	-	na	6.2E-02

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations				
		Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	
Ethylbenzene	0	-	-	na	2.1E+03	-	na	4.4E+03	-	na	2.1E+02	-	na	4.4E+02	-	na	4.4E+02	
Fluoranthene	0	-	-	na	1.4E+02	-	na	2.9E+02	-	na	1.4E+01	-	na	2.9E+01	-	na	2.9E+01	
Fluorene	0	-	-	na	5.3E+03	-	na	1.1E+04	-	na	5.3E+02	-	na	1.1E+03	-	na	1.1E+03	
Foaming Agents	0	-	-	na	-	-	na	-	-	na	-	-	na	-	-	na	-	
Guthion	0	-	1.0E-02	na	-	1.7E-02	na	-	2.5E-03	na	-	4.2E-03	na	-	-	4.2E-03	na	
Heptachlor	c	0	5.2E-01	3.8E-03	na	7.9E-04	8.8E-01	6.4E-03	2.9E-03	1.3E-01	9.5E-04	7.9E-05	2.2E-01	1.6E-03	2.2E-01	1.6E-03	2.2E-01	
Heptachlor Epoxide	c	0	5.2E-01	3.8E-03	na	3.9E-04	8.8E-01	6.4E-03	1.4E-03	1.3E-01	9.5E-04	3.9E-05	2.2E-01	1.6E-03	2.2E-01	1.6E-03	2.2E-01	
Hexachlorobenzene	c	0	-	na	2.9E-03	-	na	1.0E-02	-	na	2.9E-04	na	1.4E-04	na	-	-	2.9E-04	
Hexachlorobutadiene	c	0	-	na	1.8E+02	-	na	6.5E+02	-	na	1.8E+01	-	na	6.5E+01	-	na	1.0E-03	
Hexachlorocyclohexane	c	0	-	na	4.9E-02	-	na	1.8E-01	-	na	4.9E-03	-	na	1.8E-02	-	na	6.5E+01	
Alpha-BHC	c	0	-	na	1.7E-01	-	na	6.1E-01	-	na	1.7E-02	-	na	6.1E-02	-	na	6.1E-02	
Hexachlorocyclohexane	c	0	-	na	1.8E+00	-	na	6.5E+00	2.4E-01	na	1.8E-01	4.0E-01	-	na	6.5E-01	4.0E-01	na	
Gamma-BHC (Lindane)	c	0	9.5E-01	na	na	1.1E+03	-	na	2.3E+03	-	na	1.1E+02	-	na	2.3E+02	-	na	2.3E+02
Hexachlorocyclopentadiene	c	0	-	na	3.3E+01	-	na	1.2E+02	-	na	3.3E+00	-	na	1.2E+01	-	na	1.2E+01	
Hexachloroethane	c	0	-	2.0E+00	na	-	3.4E+00	na	-	5.0E-01	na	-	8.5E-01	na	-	8.5E-01	na	
Hydrogen Sulfide	c	0	-	na	1.8E-01	-	na	6.5E-01	-	na	1.8E-02	-	na	6.5E-02	-	na	6.5E-02	
Indeno (1,2,3-cd) pyrene	c	0	-	na	-	-	na	-	-	na	-	-	na	-	-	na	-	
Iron	c	0	-	na	9.6E+03	-	na	3.5E+04	-	na	9.6E+02	-	na	3.5E+03	-	na	3.5E+03	
Isophorone	c	0	-	0.0E+00	na	-	0.0E+00	na	-	0.0E+00	na	-	0.0E+00	na	-	0.0E+00	na	
Kepone	c	0	7.0E+01	7.9E+00	na	-	1.2E+02	1.3E+01	na	1.7E+01	2.0E+00	na	2.9E+01	3.3E+00	na	-	2.9E+01	
Lead	c	0	-	1.0E-01	na	-	1.7E-01	na	-	2.5E-02	na	-	4.2E-02	na	-	4.2E-02	na	
Malathion	c	0	-	2.4E+00	7.7E-01	--	2.4E+00	1.3E+00	--	3.5E-01	1.9E-01	--	5.9E-01	3.3E-01	--	5.9E-01	3.3E-01	
Manganese	20	0	1.4E+00	7.7E-01	--	1.5E+03	-	na	3.1E+03	-	na	1.5E+02	-	na	3.1E+02	-	na	
Mercury	c	0	-	na	5.9E+03	-	na	2.1E+04	-	na	5.9E+02	-	na	2.1E+03	-	na	2.1E+03	
Methyl Bromide	c	0	-	na	5.0E+03	-	na	5.1E-02	na	-	7.5E-03	na	-	1.3E-02	na	-	1.3E-02	
Methylene Chloride	c	0	-	3.0E-02	na	-	0.0E+00	na	-	0.0E+00	na	-	0.0E+00	na	-	0.0E+00	na	
Methoxychlor	c	0	-	0.0E+00	na	-	0.0E+00	na	-	0.0E+00	na	-	0.0E+00	na	-	0.0E+00	na	
Mirex	c	0.38	1.3E+02	1.4E+01	na	4.6E+03	2.2E+02	2.4E+01	na	9.6E+03	3.2E+01	3.8E+00	4.6E+02	5.4E+01	6.2E+00	na	9.6E+02	
Nickel	c	0	-	na	-	-	na	-	-	na	-	-	na	-	-	na	-	
Nitrate (as N)	c	0	-	na	-	-	na	-	-	na	-	-	na	-	-	na	-	
Nitrobenzene	c	0	-	na	6.9E+02	-	na	1.4E+03	-	na	6.9E+01	-	na	1.4E+02	-	na	1.4E+02	
N-Nitrosodimethylamine	c	0	-	na	3.0E+01	-	na	1.1E+02	-	na	3.0E+00	-	na	1.1E+01	-	na	1.1E+01	
N-Nitrosodiphenylamine	c	0	-	na	6.0E+01	-	na	2.2E+02	-	na	6.0E+00	-	na	2.2E+01	-	na	2.2E+01	
N-Nitrosodi-n-propylamine	c	0	-	na	5.1E+00	-	na	1.8E+01	-	na	5.1E-01	-	na	1.8E+00	-	na	1.8E+00	
Nonylphenol	c	0	2.8E+01	6.6E+00	-	4.7E+01	1.1E+01	na	7.0E+00	1.7E+00	-	1.2E+01	2.8E+00	-	-	1.2E+01	2.8E+00	
Parathion	c	0	6.5E-02	1.3E-02	na	-	1.1E-01	2.2E-02	na	1.6E-02	3.3E-03	na	2.8E-02	5.5E-03	na	-	2.8E-02	
PCB Total	c	0	-	1.4E-02	na	6.4E-04	1.8E+01	1.4E+01	na	2.3E-03	3.5E-03	na	6.4E-05	5.9E-03	na	-	5.9E-03	
Pentachlorophenol	c	0	1.1E+01	8.3E+00	na	3.0E+01	1.8E+01	1.4E+01	na	1.1E+02	2.7E+00	2.1E+00	na	3.0E+00	4.6E+00	na	3.5E+00	
Phenol	c	0	-	na	8.6E+05	-	na	1.8E+06	-	na	8.6E+04	-	na	1.8E+05	-	na	1.8E+05	
Pyrene	c	0	-	na	4.0E+03	-	na	8.3E+03	-	na	4.0E+02	-	na	8.3E+02	-	na	8.3E+02	
Radionuclides	c	0	-	na	-	-	na	-	-	na	-	-	na	-	-	na	-	
Gross Alpha Activity (pCi/L)	c	0	-	na	-	-	na	-	-	na	-	-	na	-	-	na	-	
Beta and Photon Activity (rem/m ³ /yr)	c	0	-	na	-	-	na	-	-	na	-	-	na	-	-	na	-	
Radium 226 + 228 (pCi/L)	c	0	-	na	-	-	na	-	-	na	-	-	na	-	-	na	-	
Uranium (ug/l)	c	0	-	na	-	-	na	-	-	na	-	-	na	-	-	na	-	

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		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	3.4E+01	8.5E+00	na	8.7E+03	5.0E+00	1.3E+00	na	4.2E+02	8.5E+02	2.1E+00	na	8.5E+00	2.1E+00	na	8.7E+02	
Silver	0	1.7E+00	—	na	—	2.8E+00	—	na	—	4.2E+01	—	na	—	7.1E+01	—	—	7.1E+01	—	—	7.1E+01	
Sulfate	0	—	—	na	—	—	—	na	—	—	—	na	—	—	—	—	—	—	—	—	
1,1,2,2-Tetrachloroethane ^c	0	—	—	na	4.0E+01	—	—	na	1.4E+02	—	—	na	4.0E+00	—	—	na	1.4E+01	—	—	na	
Tetrachloroethylene ^c	0	—	—	na	3.3E+01	—	—	na	1.2E+02	—	—	na	3.3E+00	—	—	na	1.2E+01	—	—	na	
Thallium	0	—	—	na	4.7E+01	—	—	na	9.8E+01	—	—	na	4.7E+02	—	—	na	9.8E+02	—	—	na	
Toluene	0	—	—	na	6.0E+03	—	—	na	1.2E+04	—	—	na	6.0E+02	—	—	na	1.2E+03	—	—	na	
Total dissolved solids	0	—	—	na	—	—	—	na	—	—	—	na	—	—	—	na	—	—	—	na	
Toxaphene ^c	0	7.3E-01	2.0E-04	na	2.8E-03	1.2E+00	3.4E-04	na	1.0E-02	1.8E-01	5.0E-05	na	2.8E-04	3.1E-01	8.5E-05	na	3.1E-01	8.5E-05	na	3.1E-01	
Tributyltin	0	4.6E-01	7.2E-02	na	—	7.8E-01	1.2E-01	na	—	1.2E-01	1.8E-02	na	—	1.9E-01	3.0E-02	na	1.9E-01	3.0E-02	na	1.9E-01	
1,2,4-Trichlorobenzene	0	—	—	na	7.0E+01	—	—	na	1.5E+02	—	—	na	7.0E+00	—	—	na	1.5E+01	—	—	na	
1,1,2-Trichloroethane ^c	0	—	—	na	1.6E+02	—	—	na	5.8E+02	—	—	na	1.6E+01	—	—	na	5.8E+01	—	—	na	
Trichloroethylene ^c	0	—	—	na	3.0E+02	—	—	na	1.1E+03	—	—	na	3.0E+01	—	—	na	1.1E+02	—	—	na	
2,4,6-Trichlorophenol ^c	0	—	—	na	2.4E+01	—	—	na	8.7E+01	—	—	na	2.4E+00	—	—	na	8.7E+00	—	—	na	
2-(2,4,5-Trichlorophenoxy)propanoic acid (Silvex)	0	—	—	na	—	—	—	na	—	—	—	na	—	—	—	na	—	—	—	na	
Vinyl Chloride ^c	0	—	—	na	2.4E+01	—	—	na	8.7E+01	—	—	na	2.4E+00	—	—	na	8.7E+00	—	—	na	
Zinc	2.2	8.2E+01	8.3E+01	na	2.6E+04	1.4E+02	1.4E+02	na	5.4E+04	2.2E+01	2.2E+01	na	2.6E+03	3.6E+01	3.6E+01	na	5.4E+03	3.6E+01	3.6E+01	na	

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
 2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipalities
 3. Metals measured as Dissolved, unless specified otherwise
 4. "C" indicates a carcinogenic parameter
 5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
 6. Antidegradation WLAs are based upon a complete mix.
 7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	1.3E+02
Arsenic	3.8E+01
Barium	na
Cadmium	2.1E-01
Chromium III	1.3E+01
Chromium VI	2.7E+00
Copper	1.6E+00
Iron	na
Lead	2.0E+00
Manganese	na
Mercury	2.0E-01
Nickel	3.7E+00
Selenium	1.3E+00
Silver	2.8E-01
Zinc	1.4E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

12/7/2012 3:03:03 PM

Facility = Primland Resort WWTP (0.13 MGD)
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 3.88
WLAc = 0.979
Q.L. = 0.2
samples/mo. = 4
samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 1.97529902145457
Average Weekly limit = 1.97529902145457
Average Monthly LImit = 1.35056274933199

The data are:

12/7/2012 3:00:07 PM

Facility = Primland Resort WWTP (0.0866 MGD)

Chemical = Ammonia

Chronic averaging period = 30

WLAa = 3.88

WLAc = 0.979

Q.L. = 0.2

samples/mo. = 4

samples/wk. = 1

Summary of Statistics:

observations = 1

Expected Value = 9

Variance = 29.16

C.V. = 0.6

97th percentile daily values = 21.9007

97th percentile 4 day average = 14.9741

97th percentile 30 day average= 10.8544

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity

Maximum Daily Limit = 1.97529902145457

Average Weekly limit = 1.97529902145457

Average Monthly LImit = 1.35056274933199

The data are:

modout 0.087 MGD.txt
"Model Run For C:\Documents and Settings\pvu61777\My Documents\000_kaharlow\Primland - VA0092207\VA0092207_12\Technical\Primland 0.087 MGD.mod On 12/4/2012 3:17:18 PM"

"Model is for UT TO ROARING CREEK."
"Model starts at the PRIMLAND RESORT discharge."

"Background Data"
"7Q10", "CBOD5", "TKN", "DO", "Temp"
"(mgd)", "(mg/l)", "(mg/l)", "(mg/l)", "deg C"
0, 2, 0, 7.413, 20

"Discharge/Tributary Input Data for Segment 1"
"Flow", "CBOD5", "TKN", "DO", "Temp"
"(mgd)", "(mg/l)", "(mg/l)", "(mg/l)", "deg C"
.087, 7, 5, , 7.2, 20

"Hydraulic Information for Segment 1"
"Length", "width", "Depth", "Velocity"
"(mi)", "(ft)", "(ft)", "(ft/sec)"
.75, 4, .097, .519

"Initial Mix Values for Segment 1"
"Flow", "DO", "cBOD", "nBOD", "DOSat", "Temp"
"(mgd)", "(mg/l)", "(mg/l)", "(mg/l)", "(mg/l)", "deg C"
.087, 7.2, 17.5, 8.66, 8.278, 20

"Rate Constants for Segment 1. - (All units Per Day)"
"k1", "k1@T", "k2", "k2@T", "kn", "kn@T", "BD", "BD@T"
1.2, 1.2, 20, 20, .5, .5, 0, 0

"Output for Segment 1"
"Segment starts at PRIMLAND RESORT"

"Total", "Segm."
"Dist.", "Dist.", "DO", "cBOD", "nBOD"
"(mi)", "(mi)", "(mg/l)", "(mg/l)", "(mg/l)"
0, 0, 7.2, 17.5, 8.66
.1, .1, 7.162, 17.254, 8.609
.2, .2, 7.136, 17.012, 8.558
.3, .3, 7.118, 16.773, 8.508
.4, .4, 7.107, 16.538, 8.458
.5, .5, 7.102, 16.306, 8.408
.6, .6, 7.101, 16.077, 8.359
.7, .7, 7.103, 15.851, 8.31
.75, .75, 7.105, 15.739, 8.286

"Discharge/Tributary Input Data for Segment 2"
"Flow", "CBOD5", "TKN", "DO", "Temp"
"(mgd)", "(mg/l)", "(mg/l)", "(mg/l)", "deg C"
0, 0, 0, , 0

"Incremental Flow Input Data for Segment 2"
"Flow", "CBOD5", "TKN", "DO", "Temp"
"(mgd)", "(mg/l)", "(mg/l)", "(mg/l)", "deg C"
.06, 2, 0, , 7.552, 20

"Hydraulic Information for Segment 2"
"Length", "Width", "Depth", "Velocity"
"(mi)", "(ft)", "(ft)", "(ft/sec)"
.45, 4, .069, .815

modout 0.087 MGD.txt

"Initial Mix values for Segment 2"

"Flow", "DO", "CBOD", "nBOD", "DOSat", "Temp"
"(mgd)", "(mg/l)", "(mg/l)", "(mg/l)", "(mg/l)", "deg C"
.147, 7.288, 11.356, 4.904, 8.391, 20

"Rate Constants for Segment 2. - (All units Per Day)"

"k1", "k1@T", "k2", "k2@T", "kn", "kn@T", "BD", "BD@T"
1.2, 1.2, 20, 20, .45, .45, 0, 0

"Output for Segment 2"

"Segment starts at"

"Total", "Segm."

"Dist.", "Dist.", "DO", "CBOD", "nBOD"
"(mi)", "(mi)", "(mg/l)", "(mg/l)", "(mg/l)"

.75,	0,	7.288,	11.356,	4.904
.85,	.1,	7.332,	11.254,	4.887
.95,	.2,	7.371,	11.153,	4.871
1.05,	.3,	7.405,	11.053,	4.855
1.15,	.4,	7.435,	10.954,	4.839
1.2,	.45,	7.449,	10.905,	4.831

"END OF FILE"

REGIONAL MODELING SYSTEM VERSION 4.0
Model Input File for the Discharge
to UT TO ROARING CREEK.

File Information

File Name: C:\Documents and Settings\pvu61777\My Documents\000_kaharlow\Prim
Date Modified: November 27, 2007

Water Quality Standards Information

Stream Name: UT TO ROARING CREEK
River Basin: Roanoke River Basin
Section: 3g
Class: VI - Natural Trout Waters
Special Standards: None

Background Flow Information

Gauge Used: S. Mayo River near Nettleridge (02069700)
Gauge Drainage Area: 84.6 Sq.Mi.
Gauge 7Q10 Flow: 15.5 MGD
Headwater Drainage Area: 0 Sq.Mi.
Headwater 7Q10 Flow: 0 MGD (Net; includes Withdrawals/Discharges)
Withdrawal/Discharges: 0 MGD
Incremental Flow in Segments: 0.1832151 MGD/Sq.Mi.

Background Water Quality

Background Temperature: 20 Degrees C
Background cBOD5: 2 mg/l
Background TKN: 0 mg/l
Background D.O.: 7.41328 mg/l

Model Segmentation

Number of Segments: 2
Model Start Elevation: 2700 ft above MSL
Model End Elevation: 1990 ft above MSL

REGIONAL MODELING SYSTEM VERSION 4.0
Model Input File for the Discharge
to UT TO ROARING CREEK.

Segment Information for Segment 1

Definition Information

Segment Definition: A discharge enters.
Discharge Name: PRIMLAND RESORT
VPDES Permit No.:

Discharger Flow Information

Flow: 0.087 MGD
cBOD5: 7 mg/l
TKN: 5 mg/l
D.O.: 7.2 mg/l
Temperature: 20 Degrees C

Geographic Information

Segment Length: 0.75 miles
Upstream Drainage Area: 0 Sq.Mi.
Downstream Drainage Area: 0.33 Sq.Mi.
Upstream Elevation: 2700 Ft.
Downstream Elevation: 2440 Ft.

Hydraulic Information

Segment Width: 4 Ft.
Segment Depth: 0.097 Ft.
Segment Velocity: 0.519 Ft./Sec.
Segment Flow: 0.13 MGD
Incremental Flow: 0.06 MGD (Applied at end of segment.)

Channel Information

Cross Section: Deep Narrow U
Character: Severely Meandering
Pool and Ripple: No
Bottom Type: Small Rock
Sludge: None
Plants: None
Algae: None

REGIONAL MODELING SYSTEM VERSION 4.0
Model Input File for the Discharge
to UT TO ROARING CREEK.

Segment Information for Segment 2

Definition Information

Segment Definition: A significant change occurs.

Geographic Information

Segment Length:	0.45 miles
Upstream Drainage Area:	0.33 Sq.Mi.
Downstream Drainage Area:	0.4 Sq.Mi.
Upstream Elevation:	2440 Ft.
Downstream Elevation:	1990 Ft.

Hydraulic Information

Segment Width:	4 Ft.
Segment Depth:	0.069 Ft.
Segment Velocity:	0.815 Ft./Sec.
Segment Flow:	0.13 MGD
Incremental Flow:	0.013 MGD (Applied at end of segment.)

Channel Information

Cross Section:	Deep Narrow U
Character:	Moderately Meandering
Pool and Riffle:	No
Bottom Type:	Small Rock
Sludge:	None
Plants:	None
Algae:	None

modout 0.13 MGD.txt
"Model Run For C:\Documents and Settings\pvu61777\My Documents\000_kaharlow\Primland
- VA0092207\VA0092207_12\Technical\Primland.mod On 12/4/2012 3:18:36 PM"

"Model is for UT TO ROARING CREEK."
"Model starts at the PRIMLAND RESORT discharge."

"Background Data"
"7Q10", "CBOD5", "TKN", "DO", "Temp"
"(mgd)", "(mg/l)", "(mg/l)", "(mg/l)", "deg C"
0, 2, 0, 7.413, 20

"Discharge/Tributary Input Data for Segment 1"
"Flow", "CBOD5", "TKN", "DO", "Temp"
"(mgd)", "(mg/l)", "(mg/l)", "(mg/l)", "deg C"
.13, 7, 5, 7.2, 20

"Hydraulic Information for Segment 1"
"Length", "Width", "Depth", "Velocity"
"(mi)", "(ft)", "(ft)", "(ft/sec)"
.75, 4, .097, .519

"Initial Mix values for Segment 1"
"Flow", "DO", "cBOD", "nBOD", "DOSat", "Temp"
"(mgd)", "(mg/l)", "(mg/l)", "(mg/l)", "(mg/l)", "deg C"
.13, 7.2, 17.5, 8.66, 8.278, 20

"Rate Constants for Segment 1. - (All units Per Day)"
"k1", "k1@T", "k2", "k2@T", "kn", "kn@T", "BD", "BD@T"
1.2, 1.2, 20, 20, .5, .5, 0, 0

"Output for Segment 1"
"Segment starts at PRIMLAND RESORT"

"Total", "Segm."
"Dist.", "Dist.", "DO", "cBOD", "nBOD"
"(mi)", "(mi)", "(mg/l)", "(mg/l)", "(mg/l)"
0, 0, 7.2, 17.5, 8.66
.1, .1, 7.162, 17.254, 8.609
.2, .2, 7.136, 17.012, 8.558
.3, .3, 7.118, 16.773, 8.508
.4, .4, 7.107, 16.538, 8.458
.5, .5, 7.102, 16.306, 8.408
.6, .6, 7.101, 16.077, 8.359
.7, .7, 7.103, 15.851, 8.31
.75, .75, 7.105, 15.739, 8.286

"Discharge/Tributary Input Data for Segment 2"
"Flow", "CBOD5", "TKN", "DO", "Temp"
"(mgd)", "(mg/l)", "(mg/l)", "(mg/l)", "deg C"
0, 0, 0, 0, 0

"Incremental Flow Input Data for Segment 2"
"Flow", "CBOD5", "TKN", "DO", "Temp"
"(mgd)", "(mg/l)", "(mg/l)", "(mg/l)", "deg C"
.06, 2, 0, 7.552, 20

"Hydraulic Information for Segment 2"
"Length", "Width", "Depth", "Velocity"
"(mi)", "(ft)", "(ft)", "(ft/sec)"
.45, 4, .069, .815

modout 0.13 MGD.txt
"Initial Mix values for Segment 2"
"Flow", "DO", "CBOD", "nBOD", "DOSat", "Temp"
"(mgd)", "(mg/l)", "(mg/l)", "(mg/l)", "(mg/l)", "deg C"
.19, 7.246, 12.348, 5.669, 8.391, 20

"Rate Constants for Segment 2. - (All units Per Day)"
"k1", "k1@T", "k2", "k2@T", "kn", "kn@T", "BD", "BD@T"
1.2, 1.2, 20, 20, .5, .5, 0, 0

"Output for Segment 2"
"Segment starts at"
"Total", "Segm."
"Dist.", "Dist.", "DO", "CBOD", "nBOD"
"(mi)", "(mi)", "(mg/l)", "(mg/l)", "(mg/l)"
.75, 0, 7.246, 12.348, 5.669
.85, .1, 7.283, 12.237, 5.648
.95, .2, 7.316, 12.127, 5.627
1.05, .3, 7.345, 12.018, 5.606
1.15, .4, 7.371, 11.91, 5.585
1.2, .45, 7.383, 11.857, 5.575

"END OF FILE"

REGIONAL MODELING SYSTEM VERSION 4.0
Model Input File for the Discharge
to UT TO ROARING CREEK.

File Information

File Name: C:\Documents and Settings\pvu61777\My Documents\000_kaharlow\Priml
Date Modified: August 03, 2007

Water Quality Standards Information

Stream Name:	UT TO ROARING CREEK
River Basin:	Roanoke River Basin
Section:	3g
Class:	VI - Natural Trout Waters
Special Standards:	None

Background Flow Information

Gauge Used:	S. Mayo River near Nettleridge (02069700)
Gauge Drainage Area:	84.6 Sq.Mi.
Gauge 7Q10-Flow:	15.5 MGD
Headwater Drainage Area:	0 Sq.Mi.
Headwater 7Q10 Flow:	0 MGD (Net; includes Withdrawals/Discharges)
Withdrawal/Discharges:	0 MGD
Incremental Flow in Segments:	0.1832151 MGD/Sq.Mi.

Background Water Quality

Background Temperature:	20 Degrees C
Background cBOD5:	2 mg/l
Background TKN:	0 mg/l
Background D.O.:	7.41328 mg/l

Model Segmentation

Number of Segments:	2
Model Start Elevation:	2700 ft above MSL
Model End Elevation:	1990 ft above MSL

REGIONAL MODELING SYSTEM VERSION 4.0
Model Input File for the Discharge
to UT TO ROARING CREEK.

Segment Information for Segment 1

Definition Information

Segment Definition: A discharge enters.
Discharge Name: PRIMLAND RESORT
VPDES Permit No.:

Discharger Flow Information

Flow:	0.13 MGD
cBOD5:	7 mg/l
TKN:	5 mg/l
D.O.:	7.2 mg/l
Temperature:	20 Degrees C

Geographic Information

Segment Length:	0.75 miles
Upstream Drainage Area:	0 Sq.Mi.
Downstream Drainage Area:	0.33 Sq.Mi.
Upstream Elevation:	2700 Ft.
Downstream Elevation:	2440 Ft.

Hydraulic Information

Segment Width:	4 Ft.
Segment Depth:	0.097 Ft.
Segment Velocity:	0.519 Ft./Sec.
Segment Flow:	0.13 MGD
Incremental Flow:	0.06 MGD (Applied at end of segment.)

Channel Information

Cross Section:	Deep Narrow U
Character:	Severely Meandering
Pool and Ripple:	No
Bottom Type:	Small Rock
Sludge:	None
Plants:	None
Algae:	None

REGIONAL MODELING SYSTEM VERSION 4.0
Model Input File for the Discharge
to UT TO ROARING CREEK.

Segment Information for Segment 2

Definition Information

Segment Definition: A significant change occurs.

Geographic Information

Segment Length: 0.45 miles
Upstream Drainage Area: 0.33 Sq.Mi.
Downstream Drainage Area: 0.4 Sq.Mi.
Upstream Elevation: 2440 Ft.
Downstream Elevation: 1990 Ft.

Hydraulic Information

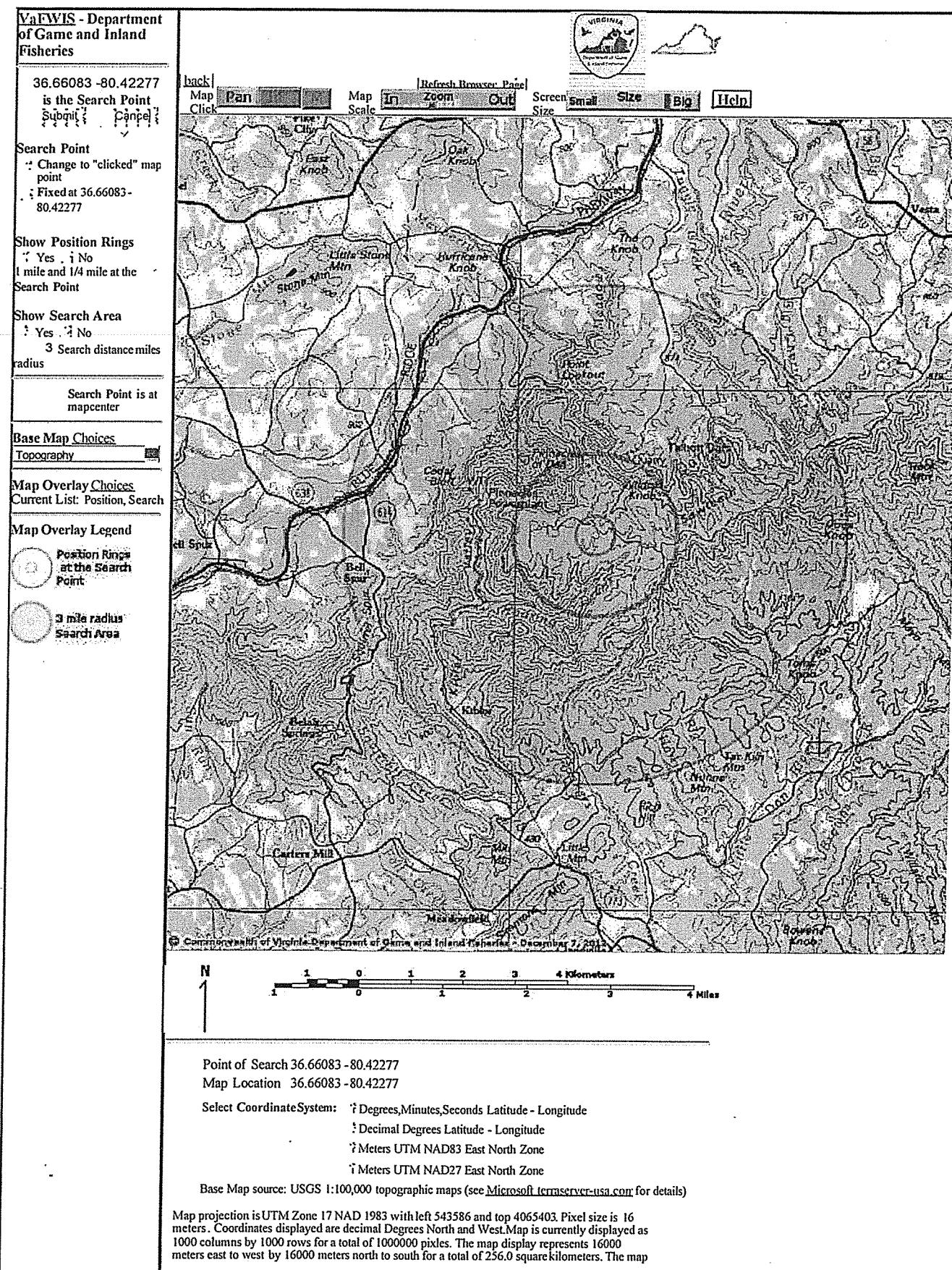
Segment Width: 4 Ft.
Segment Depth: 0.069 Ft.
Segment Velocity: 0.815 Ft./Sec.
Segment Flow: 0.13 MGD
Incremental Flow: 0.013 MGD (Applied at end of segment.)

Channel Information

Cross Section: Deep Narrow U
Character: Moderately Meandering
Pool and Riffle: No
Bottom Type: Small Rock
Sludge: None
Plants: None
Algae: None

Attachment G

Threatened and Endangered Species



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VaFWIS Search Report Compiled on 12/7/2012, 8:50:28 AM

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Known or likely to occur within a 3 mile radius around point 36.6608300 -80.4227796
in 035 Carroll County, 141 Patrick County, VA

[View Map of Site Location](#)

447 Known or Likely Species ordered by Status Concern for Conservation
(displaying first 27) (27 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name
010214	FESE	I	Logperch, Roanoke	Percina rex
060017	FESE	I	Spiny mussel, James	Pleurobema collina
050035	FESE	II	Bat, Virginia big-eared	Corynorhinus townsendii virginianus
030061	FTSE	I	Turtle, hog (= Muhlenberg)	Clemmys muhlenbergii
070118	FSSE	II	Crayfish, Big Sandy	Cambarus veteranus
040096	ST	I	Falcon, peregrine	Falco peregrinus
040293	ST	I	Shrike, loggerhead	Lanius ludovicianus
110242	FSST	I	Xystodesmid, Laurel Creek	Sigmoria whiteheadi
010127	FSST	II	Madtom, orangefin	Noturus giberti
040093	FSST	II	Eagle, bald	Haliaeetus leucocephalus
060081	ST	II	Floater, green	Lasmigona subviridis
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans

100248	FS	I	Fritillary, regal	Speyeria idalia idalia
010110	FS	III	Jumprock, bigeye	Moxostomaariommum
100001	FS	IV	fritillary, Diana	Speyeria diana
020020	CC	II	Hellbender, eastern	Cryptobranchusalleganiensis alleganiensis
030012	CC	IV	Rattlesnake, timber	Crotalus horridus
040225		I	Sapsucker, yellow-bellied	Sphyrapicus varius
040319		I	Warbler, black-throated green	Dendroicavirens
040306		I	Warbler, golden-winged	Vermivora chrysoptera
010174		II	Bass, Roanoke	Ambloplites cavifrons
010432		II	Madtom, spotted-margin	Noturus insignis ssp 1
040052		II	Duck, American black	Anas rubripes
040320		II	Warbler, cerulean	Dendroicacerulea
040304		II	Warbler, Swainson's	Limnothlypis swainsonii
040266		II	Wren, winter	Troglodytes troglodytes
080003		II	Snaketail, pygmy	Ophiogomphus howei

To view All 447 species [View447](#)

* FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; FS=Federal Species of Concern; CC=Collection Concern

** I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need

Anadromous Fish Use Streams

N/A

Impediments to Fish Passage

N/A

Threatened and Endangered Waters (2 Reaches)

[View Map of All Threatened and Endangered Waters](#)

Stream Name	T&E Waters Species					View Map	
	Highest TE *	BOVA Code, Status	, Tier **	Common & Scientific Name			
Dan River (03010103)	FSST	010127	FSST	II	Madtom, orangefin	Noturus giberti	Yes
		060081	ST	II	Floater, green	Lasmigona subviridis	
Dan River (03010103)	ST	060081	ST	II	Floater, green	Lasmigona subviridis	Yes

Managed Trout Streams (20 records)

[View Map of All Trout Stream Survey](#)

Reach ID	Stream Name	Class	Brook Trout	Brown Trout	Rainbow Trout	View Map
04RIC-01	Big Reed Island Creek	Wild trout	Y	Y		Yes
05BCB-01	Big Cherry Creek	Wild trout	Y			Yes
05BND-01	Barnard Creek	Wild trout	Y			Yes
05DAN-01	Dan River	Stockable				Yes
05DAN-02	Dan River	Wild trout	Y	Y	Y	Yes
05DAN-03	Dan River	Wild trout	Y	Y	Y	Yes
05DAN-04	Dan River	Wild trout	Y	Y	Y	Yes
05HOO-01	Hookers Creek	Wild trout			Y	Yes
05HRR-01	Harris Creek	Stockable				Yes
05HUN-01	Haunted Branch	Wild trout	Y			Yes
05IVV-01	Big Ivy Creek	Wild trout	Y	Y		Yes
05LDR-01	Little Dan River	Wild trout	Y		Y	Yes
05LDR-01T	Little Dan River	Wild trout				Yes
05MAY-01	Mayberry Creek	Wild trout	Y			Yes
05RAR-01	Roaring Creek	Wild trout	Y			Yes
05RAR-01T	Roaring Creek	Wild trout				Yes
05RMC-01	Round Meadow Creek	Wild trout	Y	Y	Y	Yes
05SBR-01	Sawpit Branch	Wild trout	Y	Y	Y	Yes
05SQL-01	Squall Creek	Wild trout	Y			Yes
10MIX-01	Mill Creek	Wild trout				Yes

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Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests

N/A

Habitat Predicted for Aquatic WAP Tier I & II Species (11 Reaches)[View Map Combined Reaches from Below of Habitat Predicted for WAP Tier I & II Aquatic Species](#)

Stream Name	Tier Species				View Map
	Highest TE	BOVA Code, Status * , Tier ** , Common & Scientific Name			
(30101031)	010432	II	Madtom, spotted-margin	Noturus insignis ssp 1	Yes
Barnard Creek (30101031)		II	Madtom, spotted-margin	Noturus insignis ssp 1	Yes
Dan River (30101031)		II	Madtom, spotted-margin	Noturus insignis ssp 1	Yes
Dan River (30101032)		II	Madtom, spotted-margin	Noturus insignis ssp 1	Yes
Ivy Creek (30101031)		II	Madtom, spotted-margin	Noturus insignis ssp 1	Yes
Roaring Creek (30101031)		II	Madtom, spotted-margin	Noturus insignis ssp 1	Yes
Round Meadow Creek (30101031)		II	Madtom, spotted-margin	Noturus insignis ssp 1	Yes
Dan River (30101031)	FESE	FSST	Madtom, orangefin	Noturus gilberti	Yes
		FESE	I	Logperch, Roanoke	
			II	Madtom, spotted-margin	
		ST	II	Floater, green	
Dan River (30101032)	FESE	FSST	II	Madtom, orangefin	Yes
		FESE	I	Logperch, Roanoke	
			II	Madtom, spotted-margin	
		ST	II	Floater, green	
Little Dan River (30101031)	FESE	FSST	II	Madtom, orangefin	Yes
		FESE	I	Logperch, Roanoke	
			II	Madtom, spotted-margin	
Dan River (30101031)	ST	010432	II	Madtom, spotted-margin	Yes
		060081	ST	II	
				Floater, green	Lasmigona subviridis

Habitat Predicted for Terrestrial WAP Tier I & II Species (2 Species)[View Map of Combined Terrestrial Habitat Predicted for 2 WAP Tier I & II Species Listed Below](#)

ordered by Status Concern for Conservation

BOVA Code	Status *	Tier **	Common Name	Scientific Name	View Map
030061	FTSE	I	Turtle, bog (= Muhlenberg)	Clemmys muhlenbergii	Yes
040096	ST	I	Falcon, peregrine	Falco peregrinus	Yes

Virginia Breeding Bird Atlas Blocks (7 records)[View Map of All Query Results](#)
[Virginia Breeding Bird Atlas Blocks](#)

BBA ID	Atlas Quadrangle Block Name	Breeding Bird Atlas Species			View Map
		Different Species	Highest TE *	Highest Tier **	
27012	Claudville, NE	59		IV	Yes
27011	Claudville, NW	3		IV	Yes
27024	Meadows of Dan, CE	50		IV	Yes
27023	Meadows of Dan, CW	20		IV	Yes
27026	Meadows of Dan, SE	44		IV	Yes
27025	Meadows of Dan, SW	33		IV	Yes
28023	Stuart, CW	20		IV	Yes

Public Holdings: (1 names)

Name	Agency	Level
Blue Ridge Parkway National Park	National Park Service	Federal

Summary of BOVA Species Associated with Cities and Counties of the Commonwealth of Virginia:

FIPS Code	City and County Name	Different Species	Highest TE	Highest Tier
035	Carroll	379	FTSE	I
141	Patrick	364	FESE	I

USGS 7.5' Quadrangles:

Claudville
Meadows of Dan
Stuart

USGS NRCS Watersheds in Virginia:

N/A

USGS National 6th Order Watersheds Summary of Wildlife Action Plan Tier I, II, III, and IV Species:

HU6 Code	USGS 6th Order Hydrologic Unit	Different Species	Highest TE	Highest Tier
NE36	Big Reed Island Creek-Stone Mountain Creek	61	FESE	I
RD01	Dan River-Ivy Creek	60	FESE	I
RD02	Dan River-Archie's Creek	60	FESE	I
RD03	Little Dan River	55	FESE	I
RD06	Upper South Mayo River-Poorhouse Creek	57	FESE	I
YA03	Headwaters Ararat River	53	FTSE	I

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